

BLODGETT®

BLODGETT® **COMBI**®



BC14E AND BC14G **COMBINATION OVEN STEAMER** **SERVICE AND REPAIR MANUAL**

BLODGETT COMBI

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CHAPTER 1

BC14G INSTALLATION

INSTALLATION SPECIFICATIONS/INFORMATION

Before starting to troubleshoot an oven, verify the oven has been installed correctly. The installation of the electric and gas connections must be performed by a qualified installer only. The installation must conform to all local and national installation standards. A hood system is required with the BC14G.

MAXIMUM SHELF LOADING	
BC14G	100 lbs (45.5 Kg)

TABLE 1

PLUMBING SPECIFICATIONS – BC14G/AA	
Water	
Water Pressure	30 PSI (207 kPa) minimum 50 PSI (345 kPa) maximum
Water Connection	3/4" Hose Hot and Cold Water
Water Regulator Setting	Preset to 20 PSI (138 kPa)
Drainage	Atmospheric Vented Drain
Drain Connection	2.00" (50.8mm) Copper
Avg Water Drain Temp.	Approximately 160°F (71°C)

TABLE 2

PLUMBING SPECIFICATIONS – BC14GDS/AA	
Water	
Water Pressure	30 PSI (207 kPa) minimum 50 PSI (345 kPa) maximum
Water Connection	3/4" Hose Cold Water
Water Regulator Setting	Preset to 20 PSI (138 kPa)
Drainage	Atmospheric Vented Drain
Drain Connection	2.00" (50.8mm) Copper
Avg Water Drain Temp.	Approximately 160°F (71°C)

NOTE: For steam requirements see page 1–5 STEAM CONNECTION for the BC14GDS.

TABLE 3

INSTALLATION

RATINGS – GAS APPLIANCES – BC14G/AA					
Gas Type	Gas Input	Voltage	Phase	Amps	Motor
Natural	Steam – 55,000 BTU/Hr	208-240	1	15	1/2HP 208-240VAC, 50/60 Hz
	Hot Air – 65,000 BTU/Hr				
	Total – 115,000 BTU/Hr	120	1	15	1/2HP 208-240VAC, 50/60 Hz
Propane	Steam – 48,000 BTU/Hr	208-240	1	15	1/2HP 208-240VAC, 50/60 Hz
	Hot Air – 65,000 BTU/Hr				
	Total – 113,000 BTU/Hr	120	1	15	1/2HP 208-240VAC, 50/60 Hz
3/4" FNPT connector for all U.S. and Canadian installations					

TABLE 4

RATINGS – GAS APPLIANCES – BC14GDS/AA					
Gas Type	Gas Input	Voltage	Phase	Amps	Motor
Natural	65,000 BTU/Hr	208-240	1	15	1/2HP 208-240VAC, 50/60 Hz
		120	1	15	1/2HP 208-240VAC, 50/60 Hz
Propane	65,000 BTU/Hr	208-240	1	15	1/2HP 208-240VAC, 50/60 Hz
		120	1	15	1/2HP 208-240VAC, 50/60 Hz
3/4" FNPT connector for all U.S. and Canadian installations					

TABLE 5

GAS PRESSURE – BC14G/AA and BC14GDS/AA					
Gas Type	Inlet Pressure	Orifice Size at Sea Level		Manifold Pressure	
		Hot Air	Steam	Hot Air	Steam
Natural	7–14" W.C.	.0531" dia	.042" dia	3.5" W.C.	3.5" W.C.
Propane	12–14" W.C.	.032" dia	.026" dia	10.0" W.C.	10.0" W.C.

TABLE 6

OVEN LOCATION

Certain minimum clearances must be maintained between the oven and any combustible or non-combustible construction. See the following table.

The following clearances are recommended for servicing.

- Oven body sides – 12" (30cm)
- Oven body back – 12" (30cm)

NOTE: On gas models, routine servicing can usually be accomplished within the limited movement provided by the gas hose restraint. If the oven needs to be moved further from the wall, the gas must first be turned off and disconnected from the oven before removing the restraint. Reconnect the restraint after the oven has been returned to its normal position.

Left Side Heat Shield

Heat sources should not be near the air vents located on the left hand side of the gas appliance. Consult the factory for optional protective side heat shield.

BC14G P/N R9527

Oven Model	MINIMUM REQUIRED CLEARANCES		
	Right Side	Left Side	Back
BC14G	1" (25.4mm)	6" (152.4mm)	6" (152.4mm)

TABLE 7

STACKING



WARNING!!

Stacking should be performed by qualified installation personnel only. The appliances are heavy. Take care to use proper tools and techniques when lifting and stacking appliances.

1. Remove the drip pan from the top appliance.
2. Attach the legs or casters to the bottom appliance.
3. Place the top appliance on the bottom appliance. Be sure all four sides are flush.

4. Bolt the two appliances together using the bolts provided.
5. Attach the flue vents as shown.
6. Replace the drip pan.
7. Connect the drain, gas (if applicable) electrical and water. Refer to page 1-5.

NOTE: An optional gas plumbing manifold may be purchased from Blodgett Combi. Order part number R9570. An optional drain plumbing manifold may be purchased from Blodgett Combi. Order part number R9381 for single or top ovens.

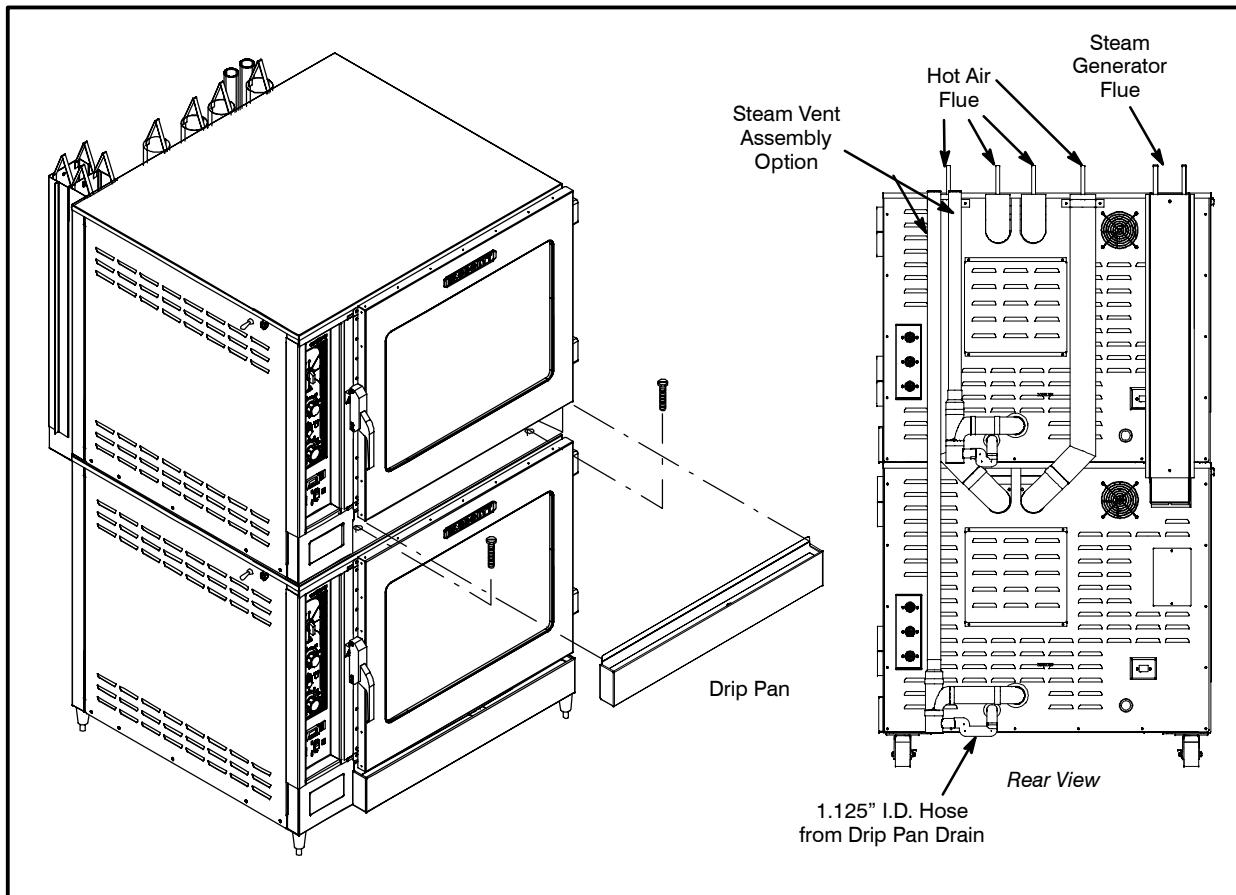


FIGURE 1

PLUMBING CONNECTIONS

WATER CONNECTION

Connect the appliance to quality water (refer to specs below) via a pressure hose with 3/4" (19mm) couplings. The water pressure needs to be between 30 psi (min) and 50 psi (max). All ovens are supplied with a water manifold which allows for one, cold water only connection to the oven. This water connector must have a brass water restrictor attached to it, which is part of the manifold assembly. Should a customer wish to supply treated water to the steam generator, a kit can be added to the oven which supplies a plug for the water manifold and a separate water flow restrictor.

Water must meet the following minimum requirements:

- Total Dissolved Solids (TDS) content will not exceed 30 parts per million.
- Water PH must be 7.0 or higher.



WARNING!!

Operating the appliance without the water restrictor installed will invalidate the warranty. The use of poor quality water will invalidate the warranty.

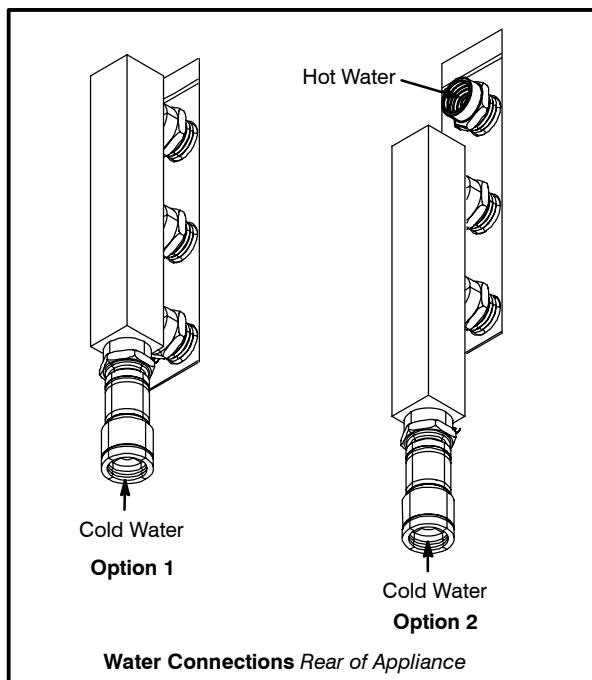


FIGURE 2

DRAIN CONNECTION

The waste drain assembly must be constructed of 2-inch copper and be atmospherically vented. The venting must have a riser so the steam vents above the top of the oven. In a stacked oven configuration, the venting on the bottom oven must vent above the top oven. It is recommended that separate drain lines be run on stacked ovens. Refer to FIGURE 3 for a recommended water drain configuration.

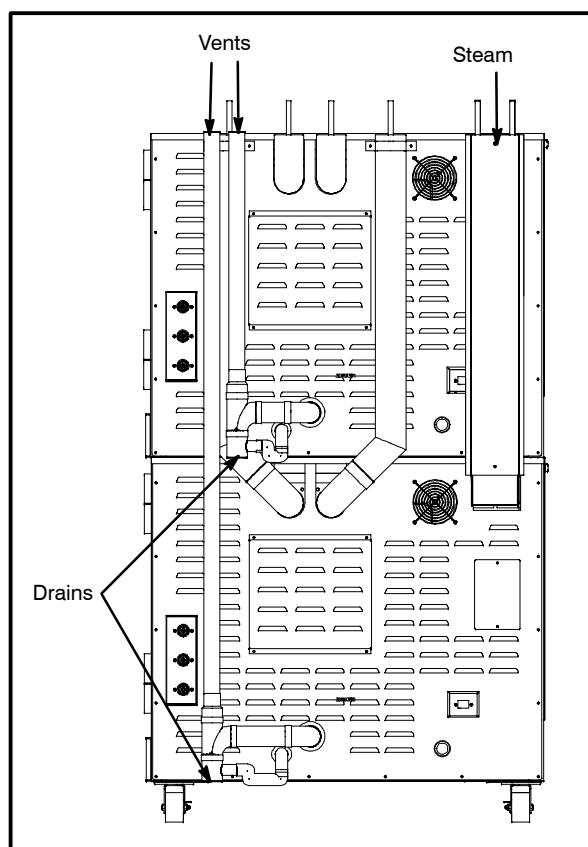


FIGURE 3

STEAM CONNECTION FOR BC14GDS

Steam supply line is 3/4" NPT. Steam must be clean, dry and potable. A particle screen and bucket trap may be needed and are recommended. 60 lbs per hour is the maximum usage per oven. Steam supply pressure should not exceed 40 to 50 psi. The flow pressure is 1-1/2 to 3-1/2 psi and is set at the steam pressure regulator supplied inside the oven.

DOOR ADJUSTMENTS

NOTE: When making door adjustments, always adjust the hinge side first.

1. Swing the door so it just hits or runs into the catch on the left hand side of the door. DO NOT latch the door handle to the catch on the oven body. The left hand side of the door should just be touching the gasket evenly from top to bottom.

Adjusting the Hinges

NOTE: If you need to adjust the hinges, always adjust the top hinge first.

NOTE: The hinges on the door have no adjustment, you can only adjust the hinge on the oven.

1. Adjust the top hinge as follows:
 - A.) Loosen the three allen head bolts on the top hinge attached to the oven.
 - B.) Tap the hinge in or out as needed. Keep the hinges parallel as shown in FIGURE 4C.
 - C.) Tighten the three allen head bolts
2. Adjust the bottom hinge as follows:
 - A.) You must remove the weight of the door from the bottom hinge to adjust it. To remove the weight from the hinge, slide a screwdriver head into the gap where the two top hinges touch and pivot. Lift up the door slightly.
 - A.) Loosen the three allen head bolts on the bottom hinge attached to the oven.

B.) Tap the hinge in or out as needed. Keep the hinges parallel as shown in FIGURE 4C.

- C.) Tighten the three allen head bolts.
- D.) Remove the screwdriver to lower the door.

Adjusting the Catch

Adjust the catch as follows:

1. In the top of the door handle is a round roller. Swing the door until the door handle is close to the catch on the oven.
2. Loosen the two bolts holding the latch to the face of the appliance.
3. Adjust the catch from side to side until the head of the catch is centered with the roller.
4. Adjust the catch up and down. There should be a small clearance between the wheel on the door handle and the tooth of the catch on the oven. See FIGURE 5. In most cases the catch will be all the way up.
5. Tighten the two bolts that hold the catch in place.
6. For easy alignment, swing the door close to the catch. Use a felt tipped marker on the door handle to mark the catch position.
7. Adjust the top of the catch in and out. Adjust the top of the catch so that the door closes firmly.
8. Tighten the single catch bolt.

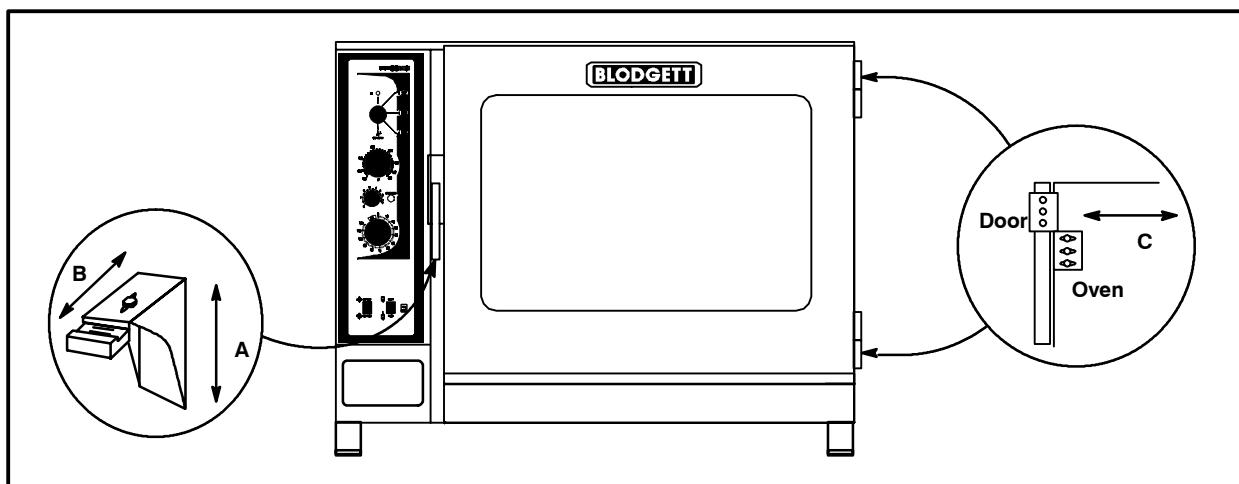


FIGURE 4

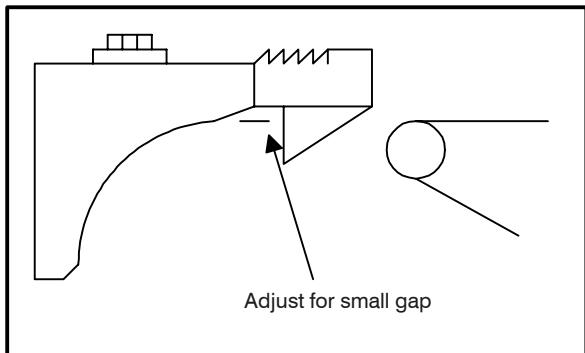


FIGURE 5

Checking Door Adjustment

NOTE: When the door is adjusted properly, you should be able to close a dollar bill between the door and gasket on all four sides of the door and still be able to pull it out. If you cannot, the door is too tight, and must be readjusted.

1. Check the closing of the door in the steam mode.
2. Next check the closing of the door when the oven is heated to 374°F.
3. The door should close easily in both conditions. If it does not, the door is too tight and must be readjusted.

FINE TUNING A DOOR GASKET

Use the following procedure if the door shuts well in both hot air and steam, but, you still have a little steam leaking from the door gasket:

1. Make a note where the steam is leaking.
2. Take a tube of silicone and lay a bead out on a flat surface. Let it dry.
3. Tack the bead behind the door gasket with a couple of dabs of silicone. This pushes the gasket out enough to seal the steam leak and does not over tighten the door.

OR:

1. If you look behind the gasket, it is held in place with a metal bar with screws. Change the screws behind the gasket where it is leaking to 10/24 round head screws. Use stainless screws and put NEVER SEAZE on the threads so they won't bind.

CHAPTER 2

***OPERATION AND
MAINTENANCE***

STANDARD CONTROLS

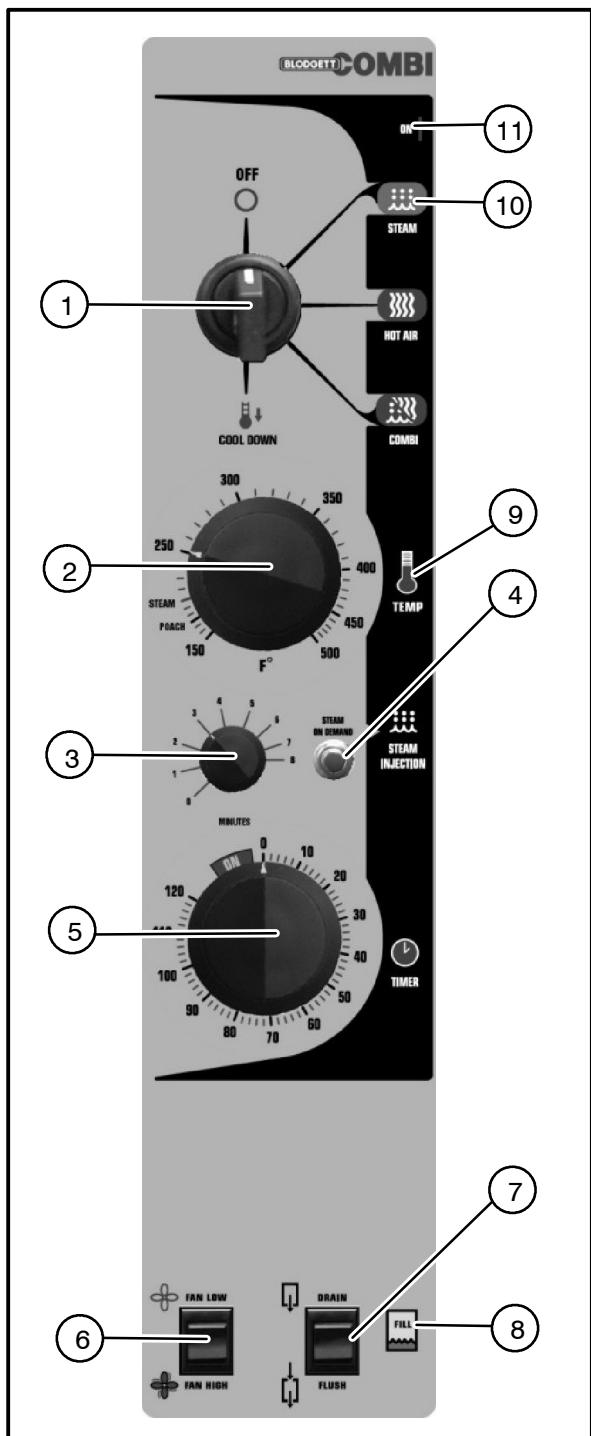


FIGURE 1

CONTROLS IDENTIFICATION

1. **MODE SELECTOR SWITCH** – turns power to the oven on or off. Allows selection of Steam, Hot Air, Combi or Cool Down Modes.
2. **TEMPERATURE DIAL** – used to set the cooking temperature in all modes. In the Steam mode, the temperature must be set to less than or equal to 212°F (100°C).
3. **STEAM INJECTION TIMER** – used to set the time for the steam injection cycle.
4. **STEAM ON DEMAND SWITCH** – used to initiate steam injection cycle.
5. **TIMER DIAL** – used to set desired cook time.
6. **FAN SPEED SWITCH** – used to select low or high speed.
7. **FLUSH/DRAIN SWITCH** – used to flush/drain the steam generator for decalcification. The oven must be off and the steam generator must be below 160°F (71°C) for this switch to work.
8. **FILL LAMP** – illuminated until the steam generator is filled with water.
9. **TEMP LIGHT** – illuminated until the temperature setting on the dial has been reached.
10. **STEAM LAMP** – illuminated when steam is being added to cooking process.
11. **ON LIGHT** – illuminated when the oven is turned on in any mode.

OPERATION AND MAINTENANCE

OPTIONAL MEAT PROBE

CONTROLS IDENTIFICATION

1. **MEAT PROBE SWITCH** – controls power to the meat probe.
2. **MEAT PROBE CONTROL** – use to set the desired probe temperature. Indicates the actual temperature of the product.
3. **MEAT PROBE CONNECTOR** – receptacle for the plug in meat probe.

NOTE: For sanitation purposes it is recommended that the meat probe remain plugged into the front panel receptacle at all times.

OPERATION

Measuring the product core temperatures during long roasting periods is very practical. It is especially important for products such as Roast Beef to reach a specific internal temperature.

Place the probe through to the middle of the product's thickest section. Be sure the probe does not touch any bone and the tip is not in a fat pocket. These conditions can cause inaccurate readings.

1. Set the MODE SELECTOR Switch to the desired function.

2. Turn the MEAT PROBE Switch (1) to ON.

3. To set the desired core temperature press and hold the * BUTTON (4) on the MEAT PROBE CONTROL (2).

Use the up arrow key (6) to increase the set-point temperature. Use the down arrow key (5) to decrease the setpoint temperature.

4. Set the TIMER to STAY ON. The cooking process runs automatically.

When the selected core temperature is reached, the buzzer will sound and the appliance shuts off automatically.

The temperature and mode can be changed at any time during the process.

5. Shut the appliance off by setting all switches to OFF.

NOTE: When setting the internal temperature, be sure to allow for carry-over cooking after the roast is removed from the oven.

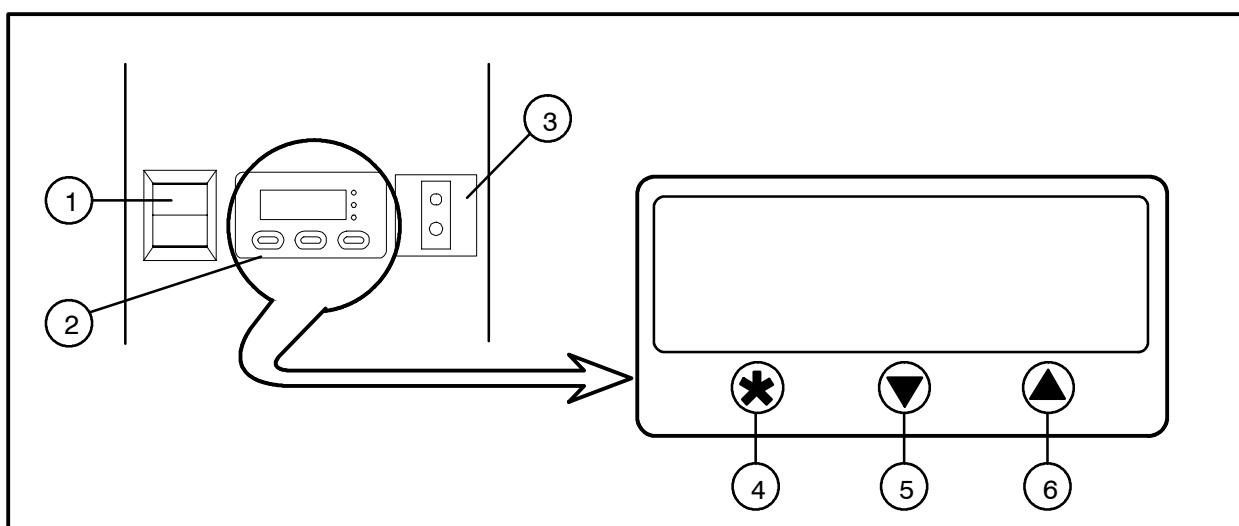


FIGURE 2

BC14G AND BC14E

DELIMING



WARNING!!

Deliming solutions are hazardous and can cause burns to the skin and eyes. Wear protective clothing and eyewear when decalcifying your appliance.

Deliming of the steam generator is the single most important preventative maintenance task. Lime will build up inside the steam generator, reducing efficiency and causing damage to the level control system.



WARNING!!

Problems caused by insufficient monthly deliming are not covered by the warranty.



WARNING!!

DO NOT actuate the deliming switch unless the oven is in the OFF mode.

To decalcify your appliance:

1. Turn appliance to the STEAM mode until steam is produced.
2. Turn the appliance OFF.
3. Move the deliming switch to the DELIME position.
4. The deliming chemical has a chart on the container for the chemical to total water volume ratio. The total water volume for your unit is measured in quarts and is listed next to your unit identification on the deliming pump.

Oven Model	Total Water Volume	Water and Deliming Solution
BC14E	23 qrts	8 qrts
BC14G	13 qrts	4 qrts

5. Pour the proper amount of deliming chemical into the deliming pump reservoir.
6. Now add the proper amount of water into the deliming pump.
7. Attach the hose from the deliming pump to the deliming port.
8. Slowly pump the deliming solution and water mixture into the appliance.
9. Disconnect the pump hose from the appliance.

10. Wait 1/2 to 1 hour.
11. Move the deliming switch to the RUN position. The appliance will automatically flush the steam generator for 90 seconds.
12. After the unit flushes for 90 seconds, clean the deliming pump and deliming port. Fill the deliming reservoir to the SYSTEM FLUSH level with tap water.
13. Attach the deliming hose to the deliming port. Slowly pump in the tap water to flush the deliming connector and pump assembly.
14. Disconnect the deliming pump assembly from the unit.
15. Press and hold the Drain/Flush switch in the Flush position for 30 seconds.

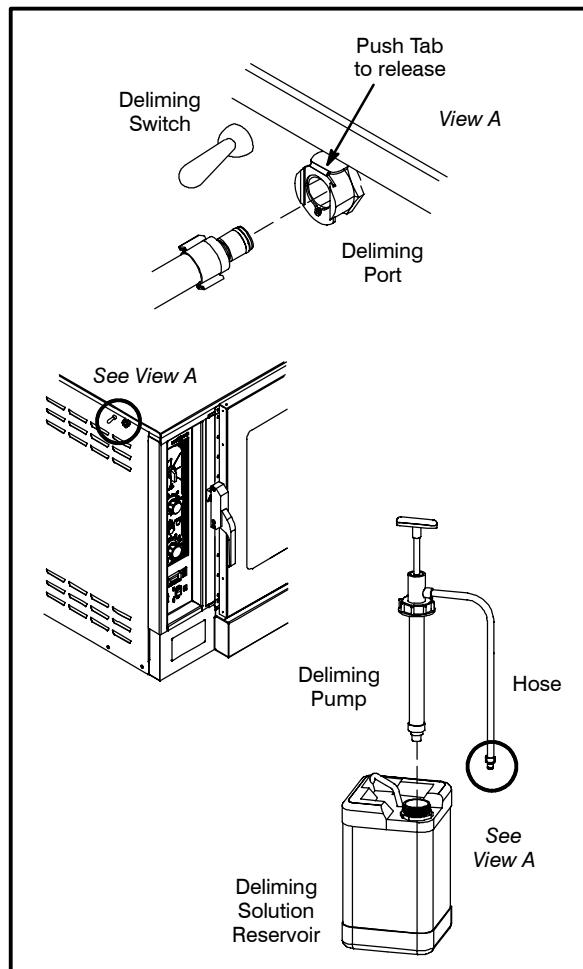


FIGURE 3

CHAPTER 3

BC14G
TROUBLESHOOTING

BC14G TROUBLESHOOTING GUIDE

In the following troubleshooting guide, the schematic is broken down into areas. This allows the oven to be checked in sections.

When troubleshooting, slide the control panel out and use your volt meter. The main control circuit voltage for all Synergy ovens is 230 volts. Once the problem is determined, it is often easier to remove the slide out from the oven completely to change components. To remove the slide out, disconnect the hot air thermostat probe, ground wire, and large brown plug in connector.

NOTE: Always troubleshoot a Synergy oven in the following sequence: COOL DOWN, HOT AIR, STEAM, and then COMBI. Reference the text that follows with the appropriate troubleshooting schematic to help you troubleshoot each mode.

NO OPERATION WITH THE MODE SWITCH IN COOL DOWN

1. Verify the deliming switch is in the on position.
2. Verify power is being supplied at the outlet.
3. **115V only** – Check fuses in the small pull-out fuse holder under the power plug in the rear of the oven. See FIGURE 1, location (A).
4. **115V only** – Check the input and output of the step-up transformer located in the rear of the oven in the upper left hand corner. In order to access the transformer you must remove the back panel. A good place to check the output voltage, before removing the back panel, is at the deliming switch on the left hand side of the oven.
5. Check the mode switch. See FIGURE 1.
6. Check the fan speed switch. See FIGURE 1 location (G).
7. Check the solid state speed control if the motor works in high speed and not low. See FIGURE 1, location (I).
8. Check the motor. See FIGURE 1, location (J).

NO OPERATION WITH THE MODE SWITCH IN HOT AIR

1. Check power at terminal 12 on mode switch, See FIGURE 1, location H. If no power, continue. If power is 208V, proceed to STEP 8.
2. Check F3 oven high limit. See FIGURE 1, location (B).

3. Check the mode switch. See FIGURE 1.
4. Check the S2 door switch. See FIGURE 1, location (D).
5. Check relay R5. See FIGURE 1, location (E).
6. Check timer S5. Turn the timer to ten minutes and continue. See FIGURE 1, location (E).
7. Check the mode switch. See FIGURE 1, location (H).
8. Check thermostat P5. See FIGURE 2, location (B).
9. Check that relay R205 contacts 9 and 1 are closed. See FIGURE 2, location (A).
10. If the hot air light is not lit on P5 check P5 temp controller for voltage. See FIGURE 2 location (B).
11. Check XFMR input and output voltage. See FIGURE 2.
12. Check hot air IGN1 terminal THS2 for voltage. See FIGURE 2 location (D).
13. Check hot air IGN2 terminal THS2 for voltage. See FIGURE 2 location (E).

NO OPERATION WITH THE MODE SWITCH IN STEAM

1. Check power at terminal 6 on the mode switch. See FIGURE 1, location (H). If no power, return to **NO OPERATION WITH THE MODE SWITCH IN HOT AIR**. Your problem is most likely a bad mode switch position. If power is 208V, proceed.

NOTE: The hot air is cycled on in the steam mode to boost temperature.

2. If the steam logo by the mode switch is illuminated, jump to STEP 10.
3. If the low water light in the lower right hand corner of the control panel stays on, jump to **NO FILLING OF STEAM GENERATOR**.
4. If hot air light not lit on P5 check P5 temp controller for voltage. See FIGURE 3, location (B).
5. Check thermostat P5. See FIGURE 3, location (A).
6. Check that relay R205 contacts 9 to 5 are closed. Check coil and contacts for proper operation. See FIGURE 3, location (I).
7. Check F6 high limit. See FIGURE 3.

TROUBLESHOOTING

8. Check that R204 contacts 9 to 1 are closed. See FIGURE 3, location (E).
9. Check that R202 contacts 1 to 9 are closed. See FIGURE 3, location (F).
10. Check XFMR1 input and output power. See FIGURE 3, location (G).
11. Check THS2 ignition module 24VAC. See FIGURE 3, location (H). If no hot air boost in the steam mode, check T5.
12. Check that R205 contacts 10 to 6 are closed. See FIGURE 3, location (I).
13. Check input and output of T5 solid state timing relay. See FIGURE 3, location (J).

The rest of the ignition circuit for the HOT AIR boost was proven when you trouble shot the hot air mode.

NO FILLING OF STEAM GENERATOR

1. Verify water is on to Synergy oven and flowing through water restrictor.
2. Check mode switch positions 4, 10, and 22. See FIGURE 7, location (A).
3. Check input and output to fast LLC (Low Level Control) float. The LLC is the long float. See FIGURE 7, location (B).
4. Check relay R204, coil, input and output. See FIGURE 7.
5. Check fast fill solenoid. See FIGURE 7, location (D).
6. Verify hot water slow fill is operating. See FIGURE 7, locations (E) and (F).

NO OPERATION WITH THE MODE SWITCH IN COMBI

Most of this circuit has already been trouble shot by proving the HOT AIR and STEAM mode work.

1. Check T2 combi solid state timing relay input and output. See FIGURE 4, location (A).

NO ON DEMAND STEAM

Set time out and press ON DEMAND STEAM button.

1. Check S9 on demand steam button. See FIGURE 5, location (A).
2. Check input and output to T3 solid state timing relay. See FIGURE 5, location (B).

3. Check relay R202 coil and contacts. See FIGURE 5.

NO FLUSH / DRAIN MODE / MANUAL OR AUTO

The T4 flush/drain solid state timing relay is energized when the P11 flush disable snap-disk is closed. Both of these parameters must be met for the manual flush/drain switch to work.

NOTE: When the P11 flush disable snap-disk is closed the steam generator is below 160 °F (71 °C) and the oven is in the OFF position.

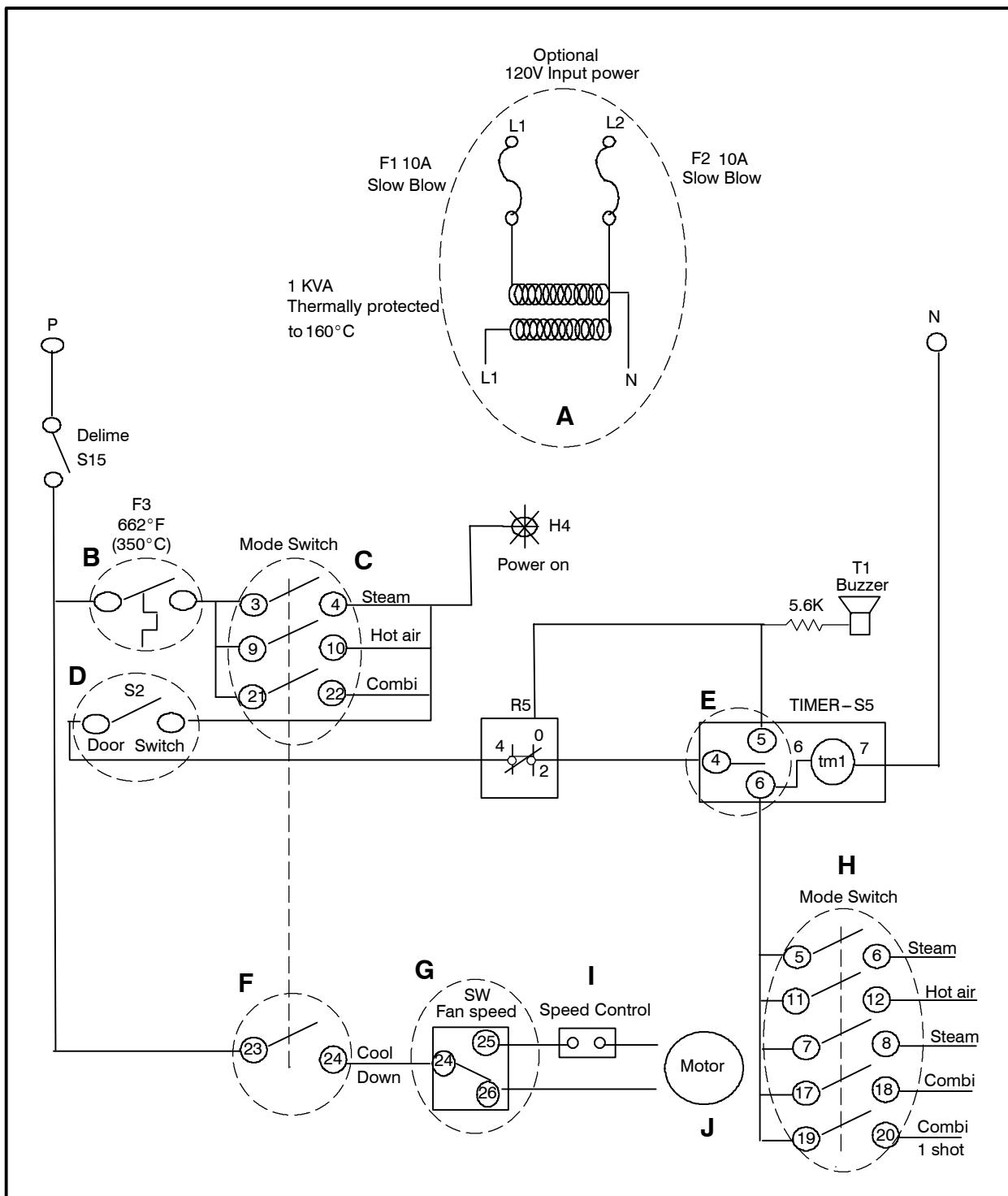
1. Check the deliming switch (S15) is in the off position. See FIGURE 6, location (A).
2. Check that P11 contact are closed. See FIGURE 6, location (B).
3. Check that relay R206 contacts are closed. See FIGURE 6.
4. **Auto Flush/Drain** – Check T4 flush/drain solid state timing relay inputs and outputs. See FIGURE 6, location (H).
5. **Manual Flush/Drain** – Check S12 flush/drain switch input and outputs. See FIGURE 6, location (D).
6. Check R203 relay coil and contacts. See FIGURE 6, location (E).
7. Check that R204 contacts are closed. See FIGURE 6, location (G).
8. Check flush/fill solenoid.

NO MEAT PROBE OPERATION

Synergy oven must be on and the timer set to the stay on position. The meat probe must also be plugged into the front control panel.

1. Check mode switch terminals 4, 10, and 22. See FIGURE 4, location (A).
2. Check S11 fuse. See FIGURE 4, location (J).
3. Check step down transformer XFMR inputs and outputs. See FIGURE 4, location (L).
4. Check inputs and outputs of meat probe controller. See FIGURE 6, location (M).
5. Check R5 relay coil and terminals. See FIGURE 4, location (O).
6. Check T1 buzzer, FIGURE 1.

BC14G INCOMING POWER CHECK



TROUBLESHOOTING

BC14G HOT AIR FLOW CHART

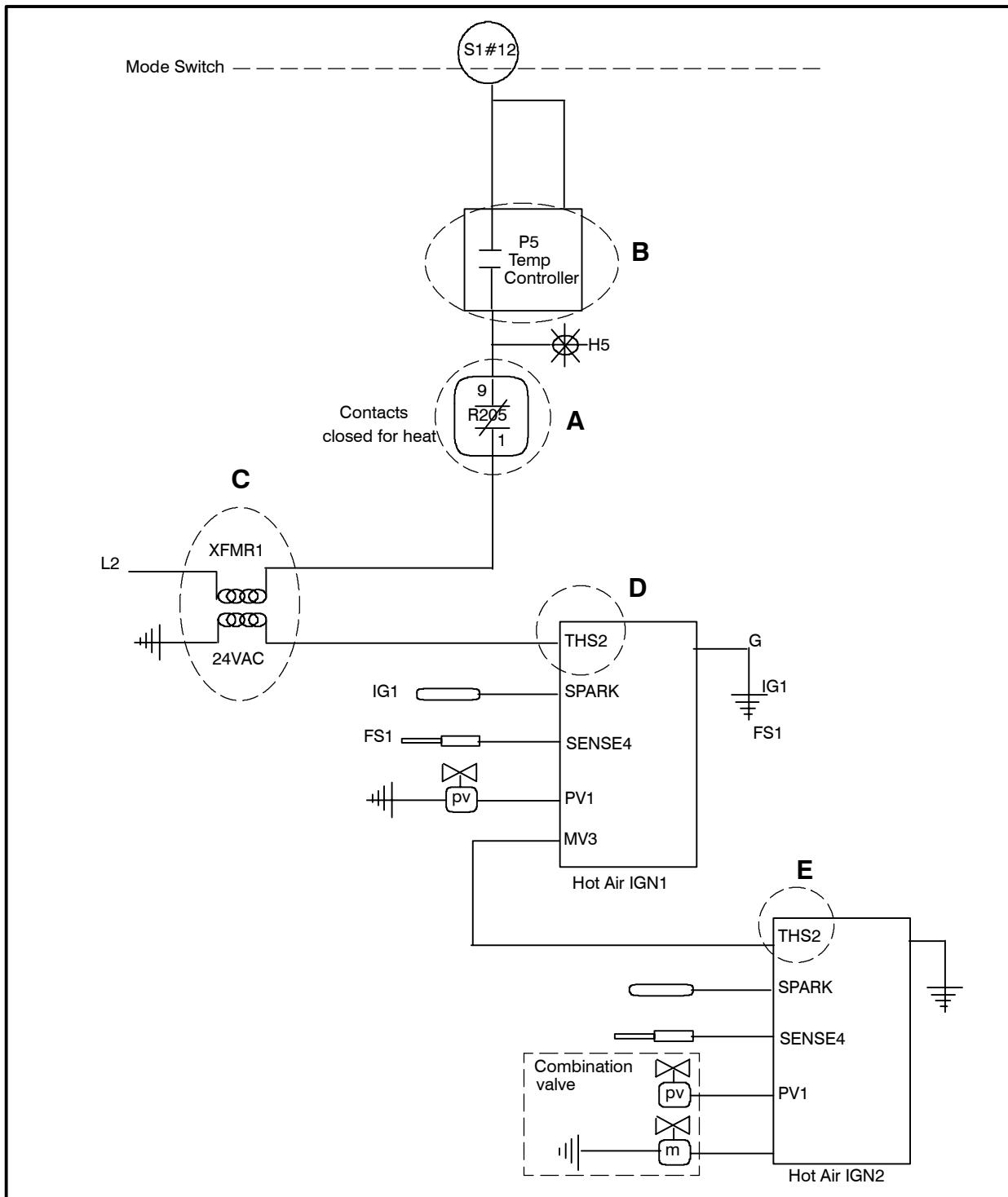


FIGURE 2

BC14G STEAM FLOW CHART/WATER FILL

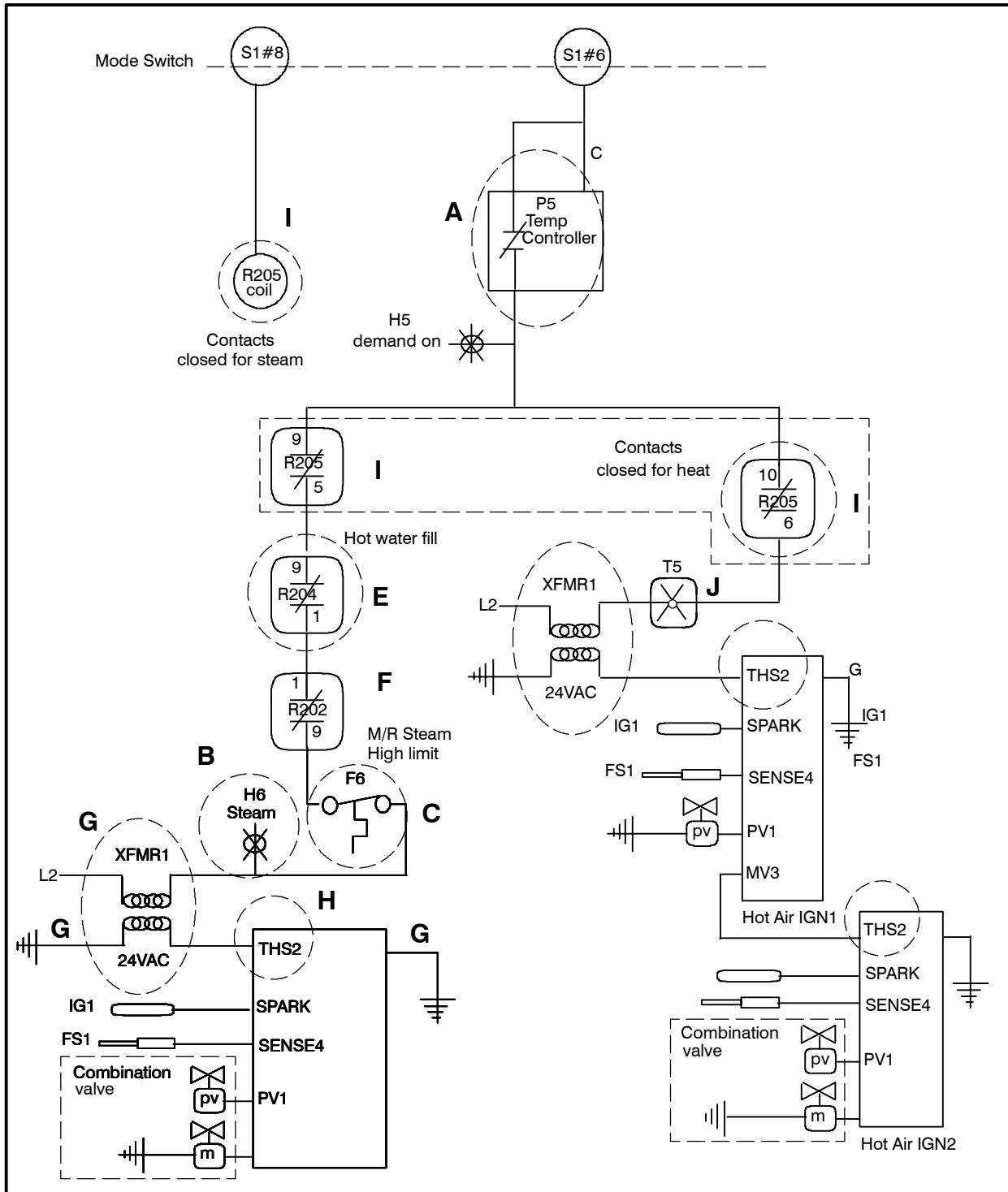


FIGURE 3

TROUBLESHOOTING

BC14G COMBI FLOW CHART

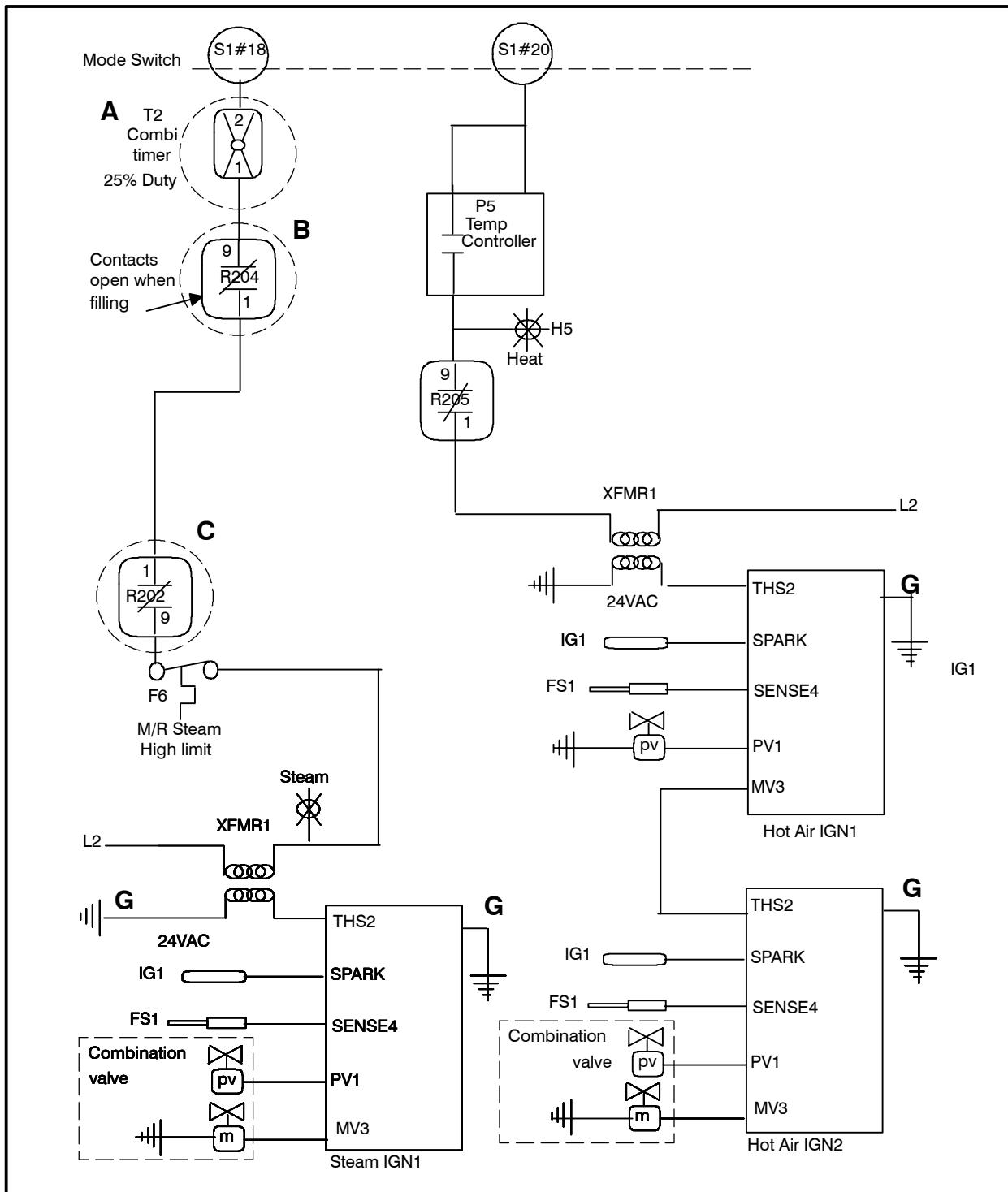


FIGURE 4

BC14G ON DEMAND STEAM FLOW CHART

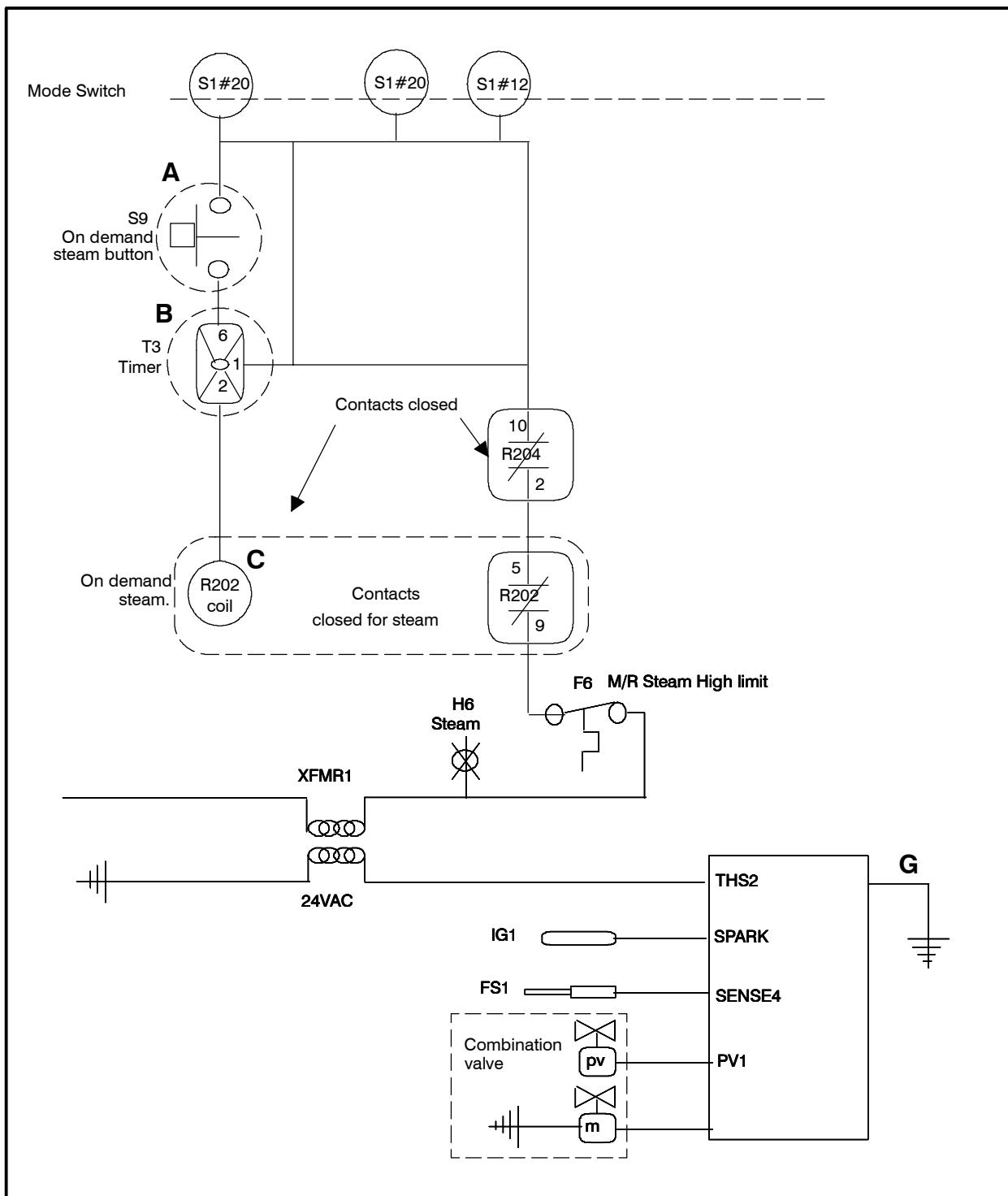


FIGURE 5

TROUBLESHOOTING

BC14G FLUSH FLOW CHART

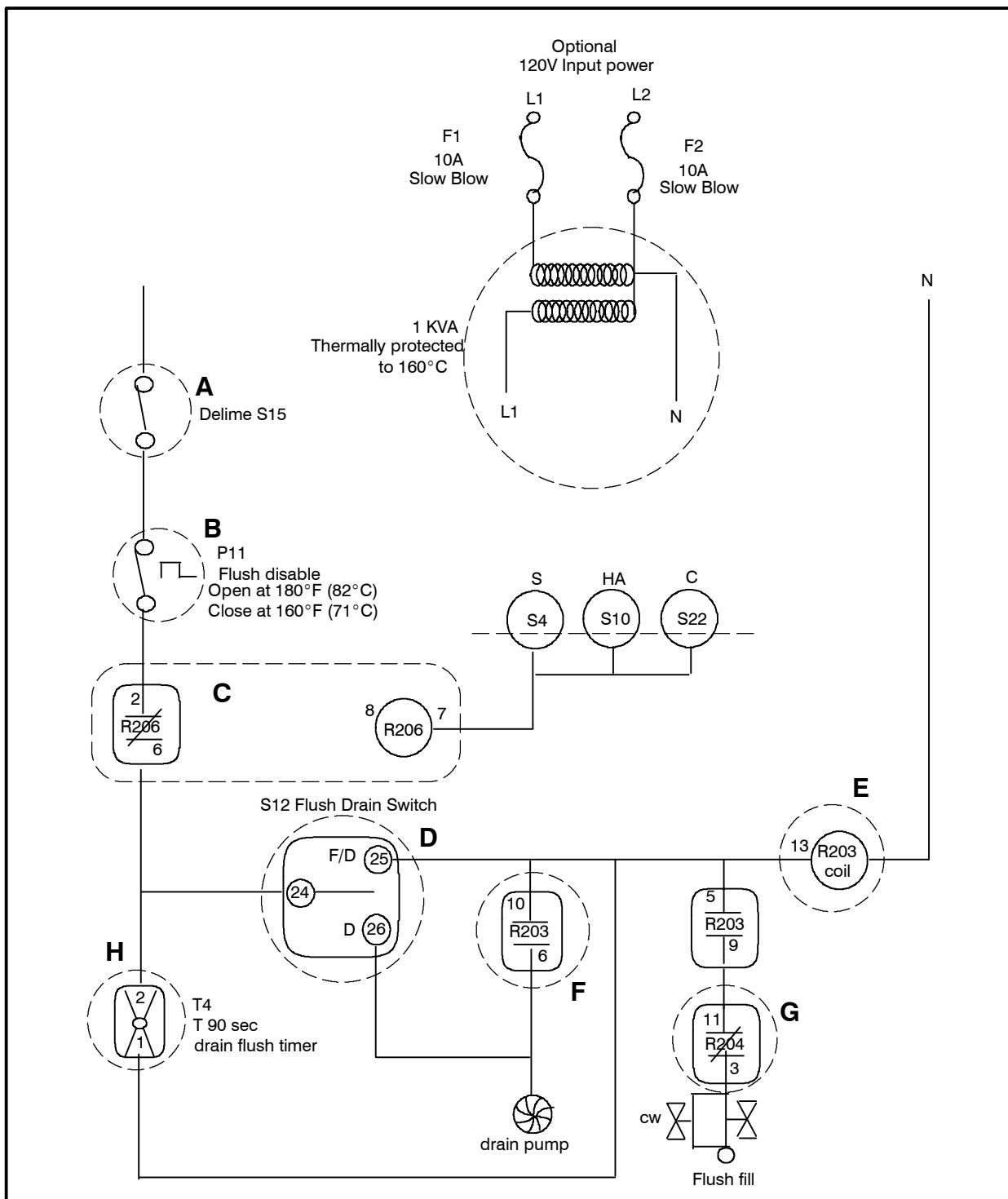


FIGURE 6

BC14G WATER FILL/MEAT PROBE/CONDENSATE/COOLING FAN

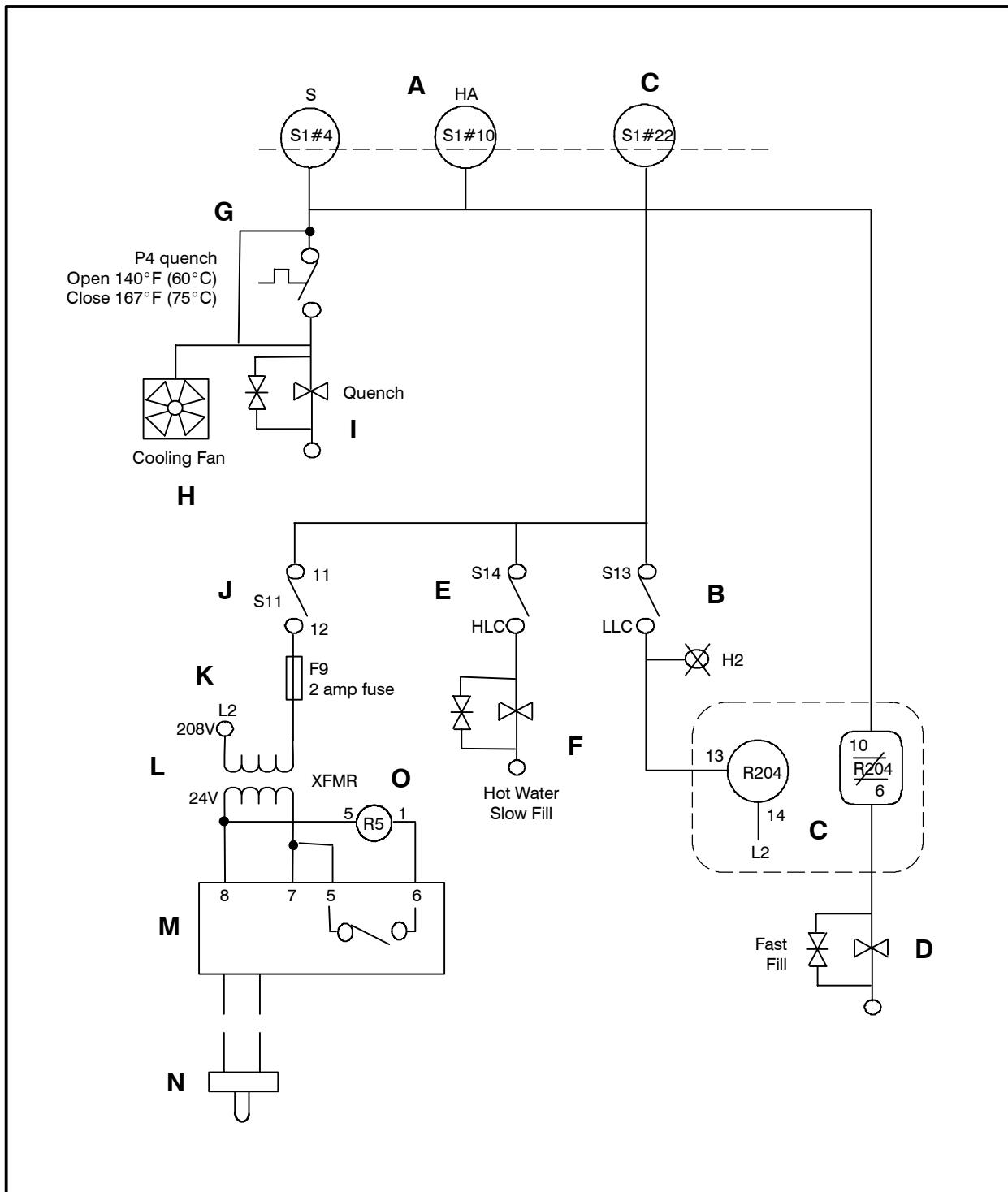


FIGURE 7

TROUBLESHOOTING

BC14G DRAIN ASSEMBLY

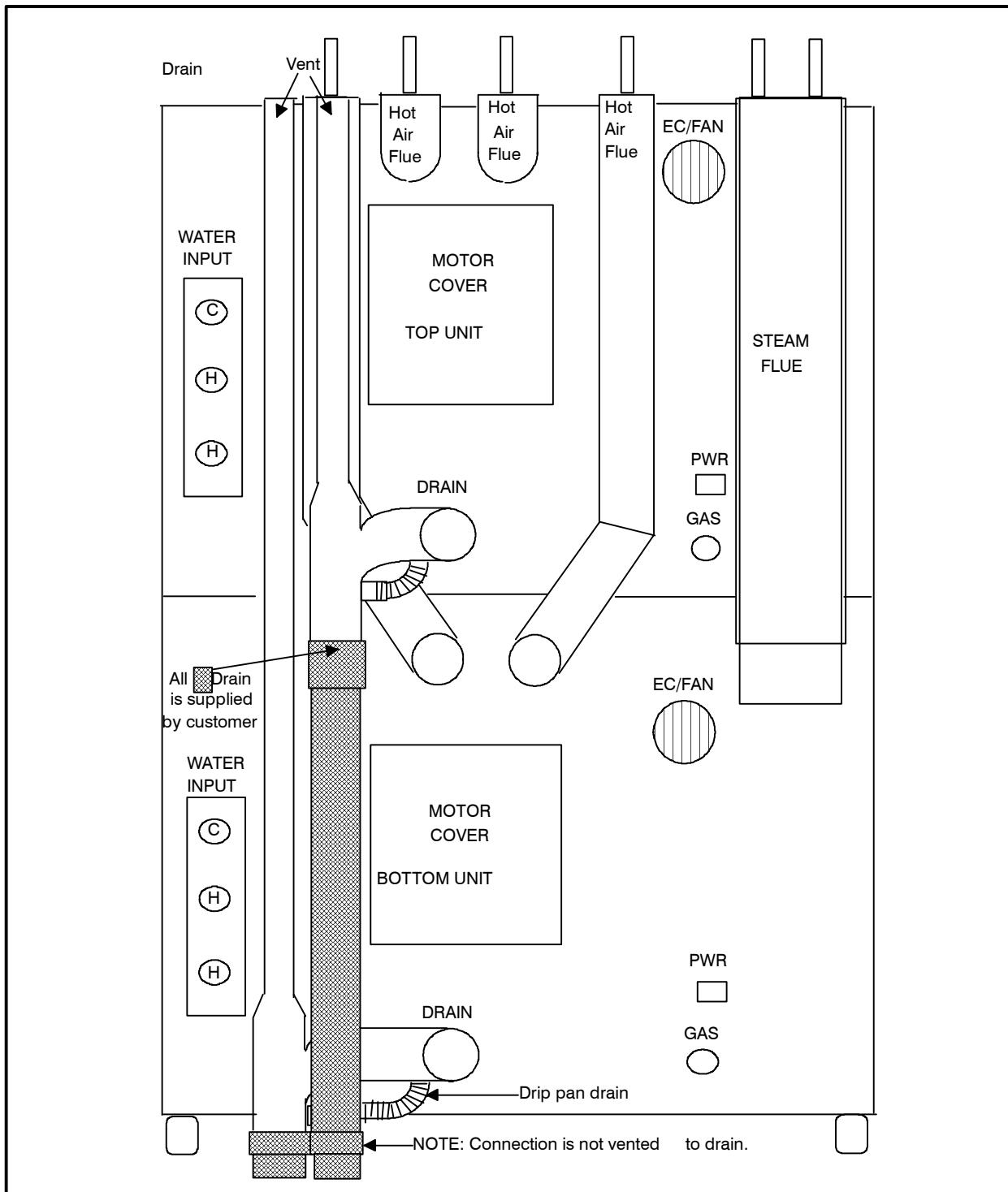


FIGURE 8

BC14G FLUE ASSEMBLY

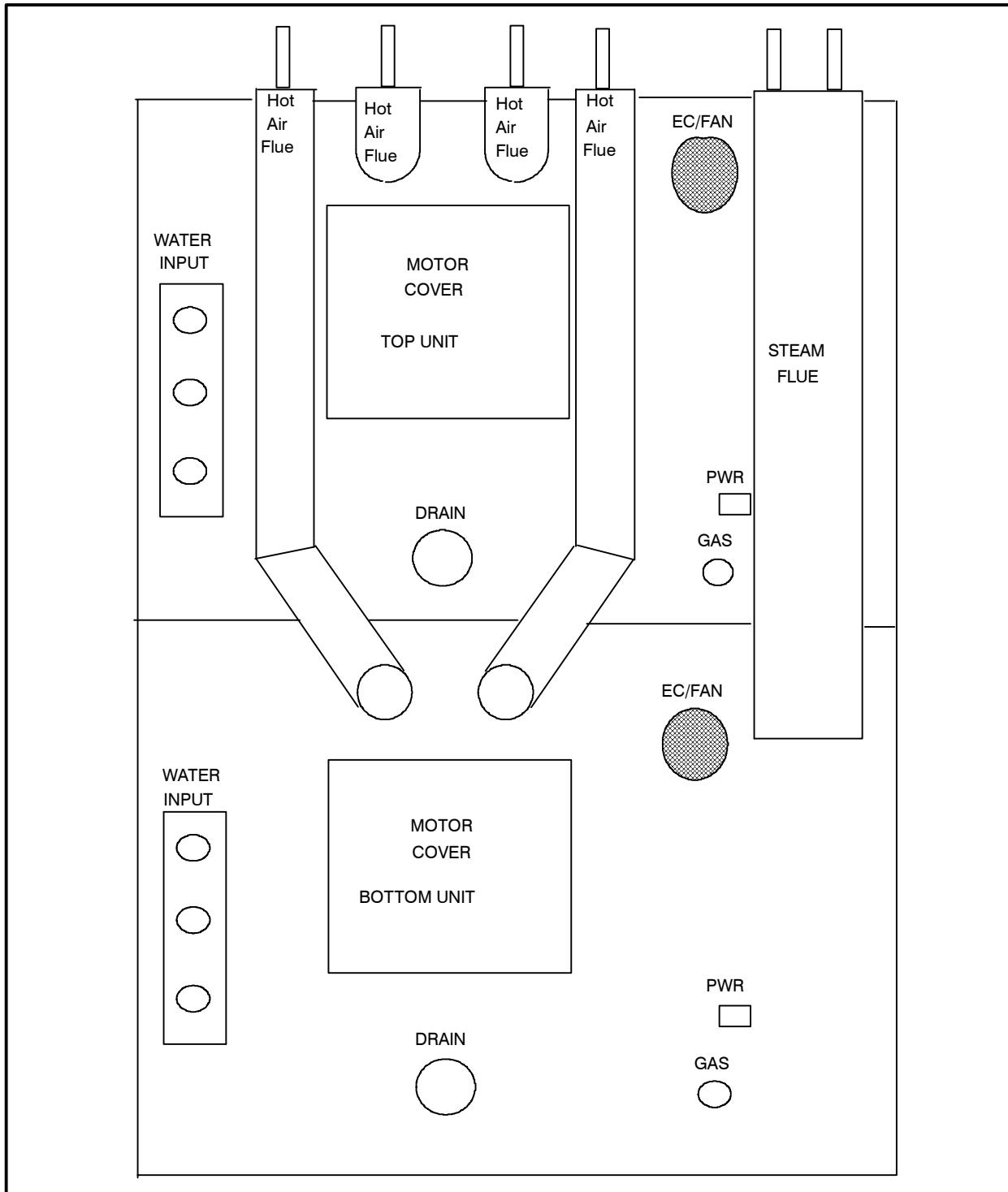
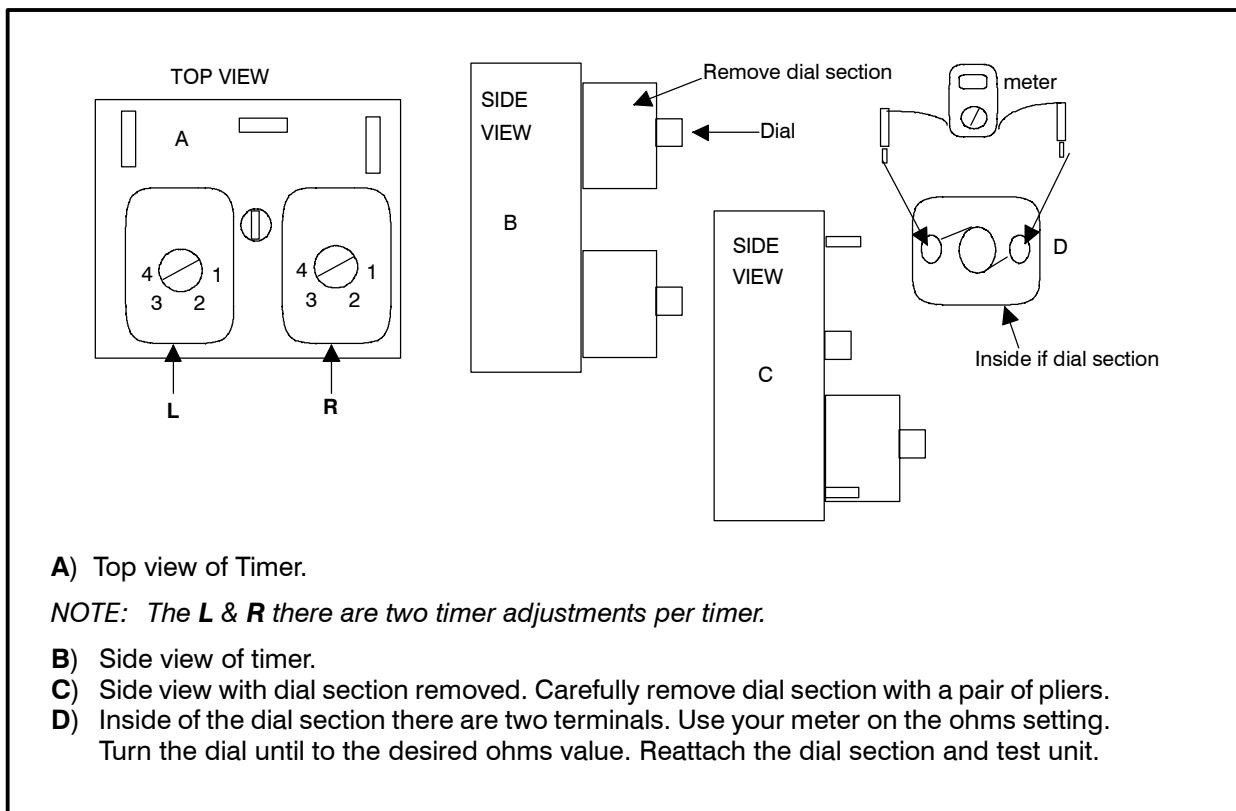


FIGURE 9

TROUBLESHOOTING

BC14G TIMER SETTINGS



A) Top view of Timer.

NOTE: The L & R there are two timer adjustments per timer.

B) Side view of timer.

C) Side view with dial section removed. Carefully remove dial section with a pair of pliers.

D) Inside of the dial section there are two terminals. Use your meter on the ohms setting. Turn the dial until to the desired ohms value. Reattach the dial section and test unit.

FIGURE 10

T2 Steam duty cycle In combi mode.

L) is 375K OHMS Steam **ON** 45 seconds.

R) is 666K OHMS Steam **OFF** 80 seconds.

T3 One shot steam

NOTE: Set by timer on front panel.

T4 Flush timer

L) Is 150K OHMS Flush **ON** 90 seconds.

T5 Hot air duty cycle. In steam mode.

L) is 375K OHMS Hot air **ON** 45 seconds

R) is 500K OHMS Hot air **OFF** 60 seconds

CHAPTER 4

BC14G SCHEMATICS

BC14G

BC14G

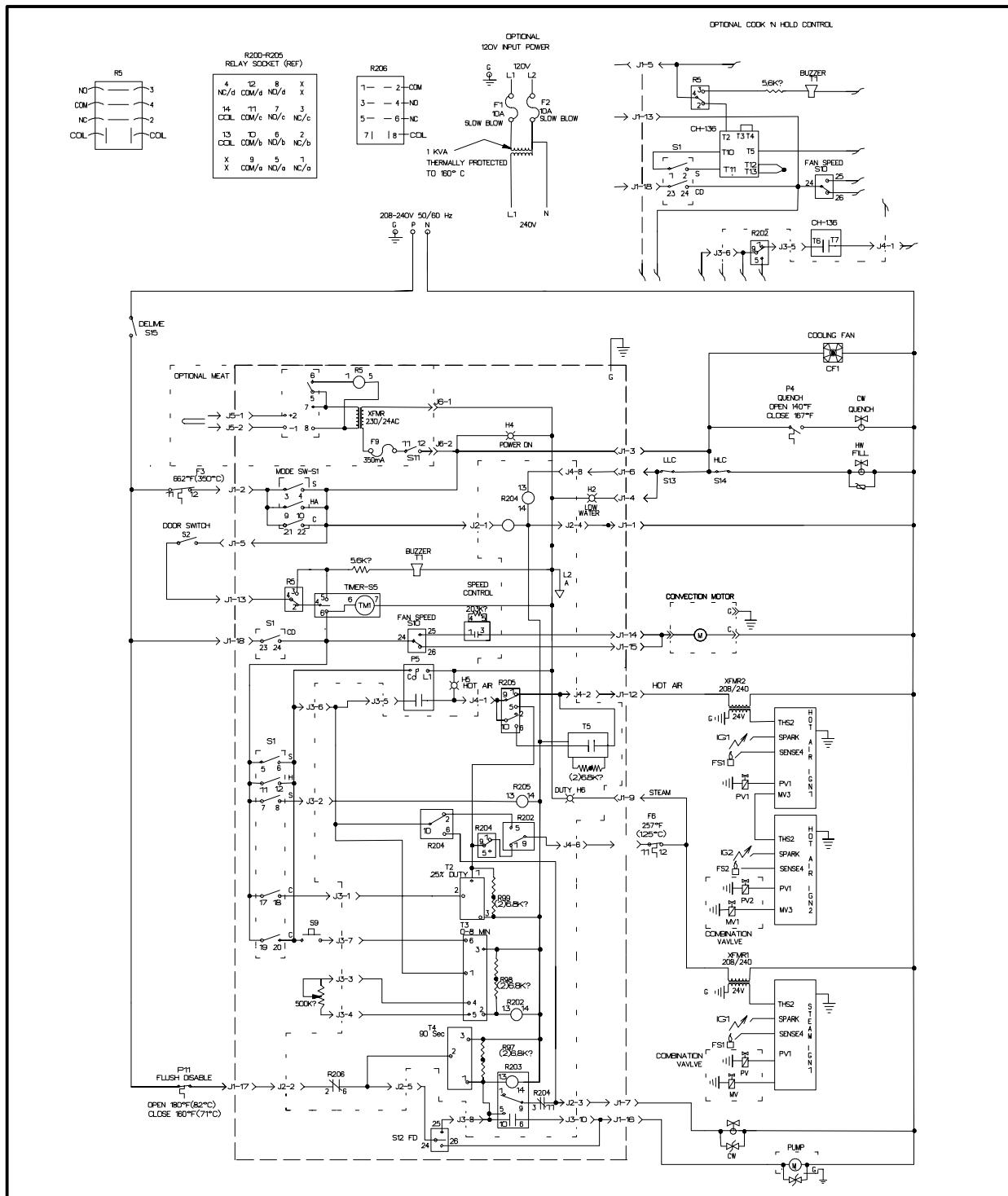
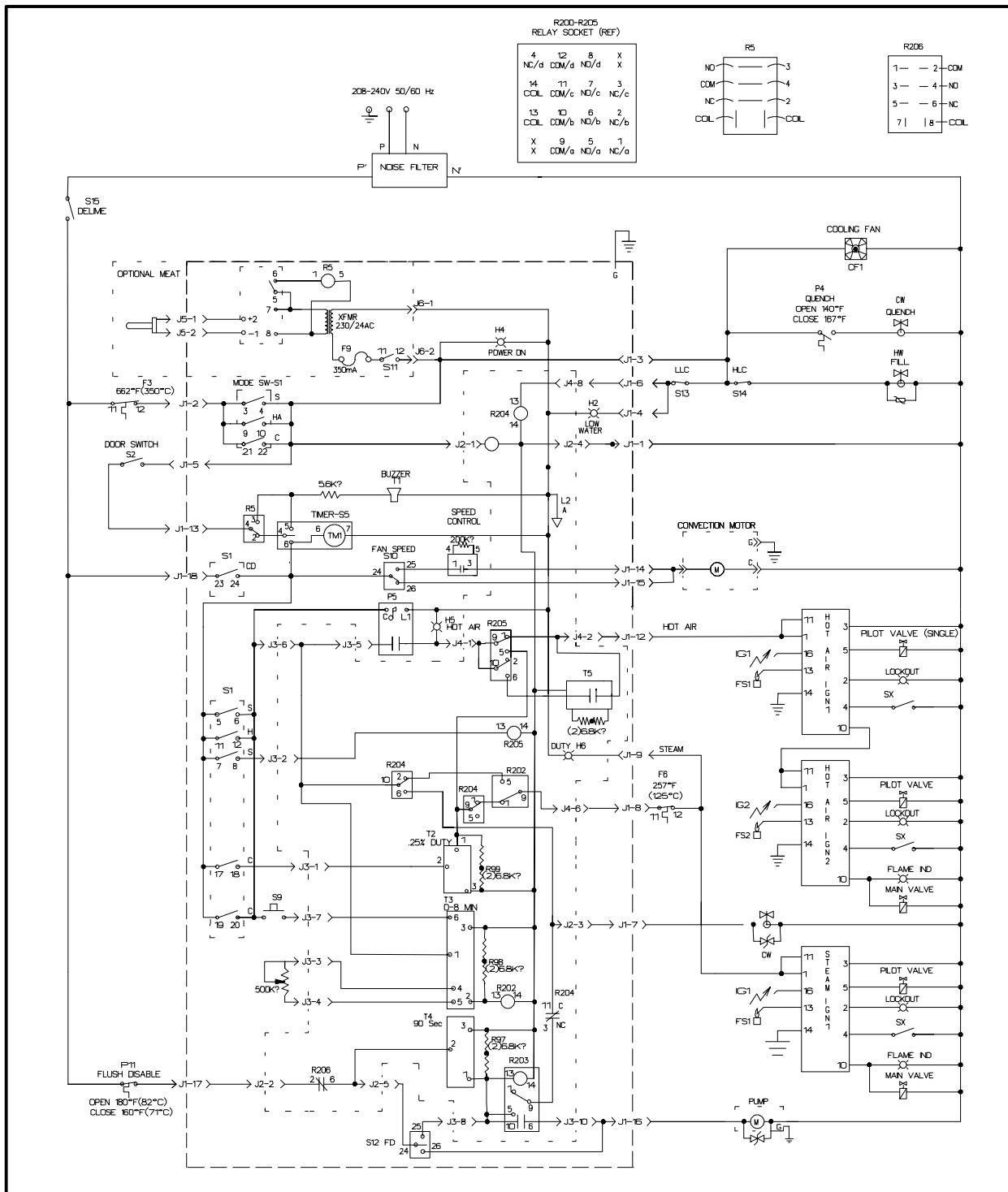


FIGURE 1

BC14G FOR CE



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CHAPTER 5

***PRE-SITE VISIT
QUESTIONS***

TROUBLESHOOTING SEQUENCE

ALWAYS troubleshoot a Synergy oven in the following sequence;

1. Cool Down
2. Hot Air
3. Steam
4. Combi

By following this sequence you bring in components gradually. DO NOT proceed to the next mode of operation until you have verified Cool Down works first. If possible, contact the customer before visiting the sight and have them check operation of the Synergy oven in each mode of operation. Suggested questions are listed with each failure mode. Have a schematic in hand when asking questions. By asking the questions in the proper sequence you are slowly troubleshooting the circuit.

COOL DOWN MODE

NO operation with the mode switch in the COOL DOWN mode.

1. Is the oven plugged in?
2. Is the delimiting switch on the left hand side of the oven in the "ON" position?
3. Push the fan speed control switch. Does the convection motor come on?

HOT AIR MODE

NO operation with the mode switch in the HOT AIR mode.

1. Does the green power on light on the top right corner of the control panel come "ON" or light up?
2. Turn the timer up to 10 minutes and then manually turn the timer down to the "zero" position. Does the timer alarm "BUZZ" or sound?
3. If you turn the thermostat knob up, does the red thermostat light to the right of the thermostat come "ON" or light up?

(Gas Ovens Only)

4. Is the gas turned "ON" in the rear of the oven and turned "ON" in the slide panel in the lower left on the front of the oven?
5. Turn the mode switch to the "OFF" position and then turn it back on to the "HOT AIR" mode. Can you hear the oven "sparking" or "tick-tick-tick"?

COMPONENT IDENTIFICATION

STEAM MODE

NO operation with the mode switch in the STEAM mode.

1. Is the water on to the oven?
2. Is the fast fill light in the lower right hand corner of the front control panel “ON”?
3. Does the green power on light on the top right corner of the control panel come “ON” or light up?
4. Turn the timer up to 10 minutes and then manually turn the timer down to the “zero” position. Does the timer alarm “BUZZ” or sound?
5. If you turn the thermostat knob up, does the red thermostat light to the right of the thermostat come “ON” or light up?
6. Is the steam symbol “ON” or lit up above the “STEAM” indicator by the mode switch?
7. Turn the “steam on demand” timer to 5 minutes and press the button next to the timer. Is the steam symbol “ON” or lit up above the “STEAM” indicator by the mode switch?

(Gas Ovens Only)

8. Turn the mode switch to the “OFF” position and then turn it back on to the STEAM mode. Can you hear the oven “sparking” or “tick-tick-tick”?

COMBI MODE

NO operation with the mode switch in the COMBI mode.

1. Does the green power on light on the top right corner of the control panel come “ON” or light up?
2. Turn the timer up to 10 minutes and then manually turn the timer down to the “zero” position. Does the timer alarm “BUZZ” or sound?
3. If you turn the thermostat knob up, does the red thermostat light to the right of the thermostat come “ON” or light up?

NOTE: If you have an operational problem in the COMBI mode and all other modes work, the problem most likely is either the Solid State Timer T2 or the mode selector switch.

BC14G AND BC14E

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CHAPTER 6

**COMPONENT
IDENTIFICATION**

COMPONENT IDENTIFICATION

The following is a key for the abbreviations of components on the schematic. Additional information is provided as to the function of the component to assist you in troubleshooting.

NOTE: Refer to the figures on pages 6-5 and 6-6 for component locations.

1. **CF1** – Electrical compartment cooling fan.
2. **CH-136** – optional COOK & HOLD control for oven operation. Controller has two LCD displays and soft-key push button control
3. **CW** – stands for COLD WATER only.
4. **(ELECTRIC OVENS) – Elements (Hot Air)** – quantity (10), 1.5KW elements located in the cook Compartment.
5. **(ELECTRIC OVENS) – Elements (Steam)** – quantity (6), 3.0KW elements located in the steam generator. Elements are in an assembly with 2 elements per assembly.
6. **Flush/Fill (solenoid)** – *(no designation)* indicates non-restricted solenoid used for fast filling and flushing of the steam generator.
7. **(GAS OVENS) – F1 & F2** – 12.5 amp control fuses
8. **(ELECTRIC OVENS) – F1 & F2** – 5 amp slow blow control fuses
9. **F3** – Cooking Compartment High Limit Thermostat. Capillary type thermostat with the sensing bulb located in the cooking compartment. Opens at 662°F or 350°C disabling the control circuit.
10. **(ELECTRIC OVENS) – F3-5A** – (5 amp fuse on secondary of step down transformer of 480v electric Synergy ovens
11. **(ELECTRIC OVENS) – F3-60A, F4-60A, F5-60A, & F6-60A** – 60amp fusing for the Hot Air & Steam elements in a BC14E Synergy Electric single-phase oven
12. **F6** – Boiler High Limit thermostat. Capillary, manual reset, steam generator high limit. Opens at 257°F or 125°C.
13. **F9** – 350ma meat probe fuse
14. **(GAS OVENS) – Hot Air IGN1, IGN2** – Hot Air Ignition Control Modual. Sequence of operation: Input 24Vac to THS2 & GND. SPARK outputs to pilot assembly and sparks. PV1 outputs to pilot valve & opens valve. SPARK output continues until flame sense is proved (.15 microamps is lockout / minimum you should see is .2). Lock out of modual is after 50 seconds if flame sense has not been proved. Once SENSE4 has proved, MV3 outputs. MV3 is connected to IGN2 modual, terminal THS2. Ignition sequence continues for 2nd modual. MV3 supplies power to main valve on the combination valve. Burners light.
15. **Hot Water Fill (solenoid)** – *(no designation)* The solenoid used for slow filling (fill line is restricted) the steam generator with water by the HLC reed float assembly.
16. **H2** – Low Water light. Low water light on the lower right hand corner of the control panel. It is only on when the Low Level Control (LLC) float switch is closed (steam generator is fast filling).
17. **H4** – Power “On” light. indicates the oven has been turn on in the “STEAM”, HOTAIR”, or “COMBI” mode.
18. **H5** – duty light for temperature control board.
19. **H6** – Steam Duty light. When lit, indicates power is being supplied to the steam ignition circuit.
20. **HLC** – High Level Control. Float switch (reed switch) in the float assembly which does the normal operation water fill to the steam generator (this is the shorter float in the float assembly)
21. **(ELECTRIC OVENS) – K2 (A & B Primary)** – Solid State Hot Air Relays (SSRs). (2) 45 amp solid state relays for hot air. K2A is deactivated in Combi mode if Steam circuit is calling for heat.
22. **(ELECTRIC OVENS) – K3 (A & B Primary)** – Solid State Steam Relays (SSRs) (2) 45 amp solid state relays for steam. K2A is deactivated in Combi mode if the thermostat is calling for heat.
23. **LLC** – Low Level Control. Float switch (reed switch) in the float assembly which fast fills the steam generator (this is the longer float in the float assembly).

COMPONENT IDENTIFICATION

24. **M** – Convection motor. 1/2 hp , 208V / 115V convection motor. Has an internal self-resetting thermal overload at 250°F.

25. **Meat Probe** (*no designation*) – “J” type thermocouple meat probe which plugs into front of the oven.

26. **Meat Probe Controller** (*optional*) – shuts off the oven and sounds the buzzer when set temperature has been reached.

27. **(ELECTRIC OVENS) – Noise Filter** – noise filter in control circuit.

28. **Pump** – pump used for removing water from the steam generator when deliming and when self-flushing.

29. **(GAS OVENS) – PV , PV1 , PV2** – pilot valves. PV is the pilot valve on the main combination valve used for steam. PV1 is the single coil pilot valve used for hot air. PV2 is the pilot valve on the main combination gas valve used for hot air.

30. **P4** – Quench snap-disk. Snap-disk located near the rear of the drain pipe to supply power to the quench solenoid. Closes at 167°F or 75°C. Opens at 140°F or 60°C.

31. **P5** – Temperature Control Board. Power in is on terminals C & L1. Terminals COM & NO close until desired set temperature is reached in all modes of operation.

32. **P11** – Flush Disable snap-disk. Snap-disk located on the steam generator used to energize the T4 Flush Solid State Timer. Closes at 160°F or 71°C. Opens at 180°F or 82°C.

33. **(ELECTRIC OVENS) – P12** – Cold Plate Water Flow Snap Disk snap disk located on the Solid State Relay Cold Plate assembly, opens at 95°F or 35°C. Closes at 122°F or 50°C. Provides normal cooling of cold plate assembly.

34. **(ELECTRIC OVENS) – P13** – Cold Plate NO water Fail-safe Snap Disk snap disk located on the Solid State Relay Cold Plate assembly, opens at 176°F or 80°C and shuts down the oven / closes at 149°F or 65°C.

35. **(GAS OVENS) – Quench** – Cold water drain quench solenoid. Coil resistance is approximately 1830 ohms.

36. **(ELECTRIC OVENS) – Quench** – Cold water drain quench solenoid. Coil resistance is approximately 1830 ohms. Water supply also for the SSR cold plate assembly.

37. **Resister** (designated as “5.6Ka”) – Resister in series with the buzzer to drop voltage to the buzzer to allow for long periods of operation.

38. **R5** – Meat probe relay

- Coil is terminals 1 & 5. Coil is energized by the meat probe control terminal 6.
- Coil energized. Terminals 4 to 3 close, energizing the buzzer.
- Coil not energized. Terminals 4 to 2 closed, power to timer, S5, terminal 4.

39. **(ELECTRIC OVENS) – R200** – Hot Air Relay coil is terminals 13 & 14 / coil is energized when oven is in “Hot Air” or “Combi” and P5 thermostat is calling for heat. Terminals 10 to 6 close, energizing K2-B.

40. **(ELECTRIC OVENS) – R201** – Load Splitting Relay

- Coil is terminals 13 & 14. Coil is energized by R204 terminal 1 when steamgenerator is full
- Coil energized. Terminals 9 to 5 close, power is supplied to F6, then the steam contactors. Terminals 10 to 2 open, no power to K2-A Hot Air contactor.
- coil not energized. Terminals 9 to 5 are open, no power to F6 (no power to steam contactors). Terminals 10 to 2 are closed, supplies power to K2-A Hot Air contactor.

41. **(GAS OVENS) – R202** – On demand steam relay

- Coil is terminals 13 & 14. Coil is energized by One shot Steam timer, T3 terminal 2.
- Coil energized terminals 9 to 5 close. This by-passes the temperature thermostat and provides power to F6 Boiler High Limit thermostat.
- Coil not energized terminals 9 to 1 closed, normal operation, provides power to F6 Boiler High limit thermostat.

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42. **(ELECTRIC OVENS) – R202** – On demand steam relay

- Coil is terminals 13 & 14. Coil is energized by One shot Steam timer, T3 terminal 2.
- Coil energized terminals 9 to 5 close / provides power to R204 relay terminal 9 (power is by-passed the temperature thermostat).
- Coil not energized terminals 9 to 1 closed, normal operation, provides power to P5 Hot Air Thermostat.

43. **203** – Flush / Drain Relay.

- Coil is terminals 13 & 14. Coil is energized by Flush Timer terminal 1.
- Coil energized. Terminals 9 to 5 close. Power provided to Fast Fill solenoid. Terminals 10 to 6 close. Power provided to pump.
- Coil not energized. Terminals 9 to 5 open. Terminals 10 to 6 open. Normal operation, auto flush/drain operation disabled.

44. **(GAS OVENS) – R204** – Water Fill Relay / Fast low water fill

- Coil is terminals 13 & 14. Coil is energized by Low Level Control, LLC, water level float reed switch
- Coil energized. Terminals 10 to 6 close. Provides power to fast fill solenoid. Terminals 3 to 11 open. Prevents power being supplied to R203 relay, terminal 9
- Coil not energized. Terminals 10 to 2 closed, normal operation, provides power to R202 terminal 5

45. **(ELECTRIC OVENS) – R204** – Water Fill Relay / Fast low water fill

- Coil is terminals 13 & 14. Coil is energized by Low Level Control, LLC, water level float reed switch
- Coil energized. Terminals 10 to 6 close. Provides power to fast fill solenoid. Terminals 3 to 11 open. Prevents power being supplied to R203 relay, terminal 9
- Coil not energized. Terminals 10 to 6 are open (no power to fast fill solenoid) / terminals 9 to 1 are close, power provided to R201 relay terminals 13 and 9.

46. **(GAS OVENS) – R205** – Steam Override Relay

- Coil is terminals 13 & 14. Coil is energized by S1 Mode switch terminal 8 when turned to the Steam Mode.
- Coil energized terminals 10 to 6 close, supplies power to T5 Hot Air Duty Cycle SST. Terminals 9 to 5 close, supplies power to R204 terminal 9.
- Coil not energized terminals 9 to 1 closed, supplies power to XFMR2 Step Down Transformer for the hot air ignition moduals.

47. **(ELECTRIC OVENS) – R205** – Steam Override Relay

- Coil is terminals 13 & 14. Coil is energized by S1 Mode switch terminal 8 when turned to the Steam Mode.
- Coil energized terminals 10 to 6 close, supplies power to T5 Hot Air Duty Cycle SST. Terminals 9 to 5 close, supplies power to R204 terminal 9.
- coil not energized terminals 9 to 1 closed, supplies power to XFMR2 Step Down Transformer for the hot air ignition moduals.

48. **R206** – Drain / Flush Disable relay

- Coil is terminals 7 & 8. Coil is energized when oven is turned on.
- Coil energized. Terminals 2 to 6 opens. Allows no power to Flush Timer, T4, terminal 2.
- Coil not energized. Terminals 2 to 6 are closed and allows power to be applied to Flush Timer, T4, initiating 90 second flush / drain cycle

49. **S1** – Mode Selector Switch. Used to select operation mode; “CD” is the Cool Down contacts, “S” are steam contacts, “H” are Hot Air contacts, “C” are the Combi contacts.

50. **S2** – Proximity Door Switch.

51. **S5** – Timer. Power in is on terminals 6 & 7. Terminals 4 to 6 are closed when the timer is set for continuous “on” or set out to a specific time. When timed out, terminals 4 to 5 close, energizing the T1 buzzer.

COMPONENT IDENTIFICATION

52. **S9** – One Shot Steam Button. Pressing the button in any mode applies power to terminal 2 of T3 One Shot Steam Solid State Timer and initiates the steam circuit for the set time.

53. **S10** – Fan Speed Switch

- High speed, terminals 24 to 26 are closed applying power to convection motor.
- Low Speed, terminals 24 to 25 are closed applying power to Solid State Motor Speed Control.

54. **S11** – Meat Probe Switch. terminals 11 to 12 close supplying power to XFMR 208V to 24V step down transformer for the meat probe.

55. **S12** – Flush / Drain Switch

- In order to work, the oven must be in the “OFF” position and the steam generator must be below 160°F or 71°C.
- Flush – terminals 24 to 25 close supplying power to R203 Flush / Drain Solid State timer.
- Drain – terminals 24 to 26 close supplying power to the pump.

56. **S15** – Deliming switch. SPST switch used for deliming. OFF position is for deliming. ON for normal operation.

57. **Speed Control** – Solid state motor speed controller, drops the motor rpm to approximately 900 rpm.

58. **(GAS OVENS) – Steam IGN1** – Steam Ignition Control Modual. Sequence of operation: input 24Vac to THS2 & GND. SPARK outputs to pilot assembly & sparks. PV1 outputs to pilot valve & opens valve. SPARK output continues until flame sense is proved (.15 microamps is lock-out / minimum you should see is .2). Lock out of modual is after 50 seconds if flame sense has not been proved. Once SENSE4 has proved, MV3 outputs. MV3 supplies power to main valve on the combination valve and burners light.

59. **(GAS OVENS) – Transformer** (designated as “120V /240V 1 KVA THERMALLY PROTECTED to 160°C) – step up transformer the control circuit for gas ovens with 120Vac input.

60. **(ELECTRIC OVENS) – Transformer** (designated as “480V / 240V 150VA”) – step down transformer for 480V electric ovens only (transformer is located under oven cavity).

61. **T1** – Buzzer

62. **T2** – Steam Duty Cycle Timer

- Power in on terminals 2 & 3. Output on terminal 1
- Used to provided power to the steam circuit in the Combi mode. Power supplied to terminal 2, terminal 1 on for 45 seconds and off for 80 seconds.

63. **T3** – One Shot Steam Solid State Timer

- Power in on terminals 1 & 3. Terminal 6 is a trigger which initialize timer output on terminal 2. Resistance setting on terminals 4 to 5 determine stay on time.
- When steam injection button is pressed, power to terminal 6 initiates power out of terminal 2 for set time. Steam circuit energized for set time.

64. **T4** – Flush Solid State Timing relay. Power in is on terminals 2 & 3. Output is to terminal 1 for 90 seconds. This energizes R203 which allows the pump and fill solenoid to come on.

65. **(GAS OVENS) – T5** – Hot Air Duty Cycle Solid State Timer. Power in is on terminals 2 & 3. Output is to terminal 1 for 45 seconds on and 60 seconds off. When terminal 1 is on, power is supplied to the Hot air circuit to boost the Steam mode.

66. **(GAS OVENS) – XFMR1** – Step Down transformer 208Vac / 240Vac to 24Vac. Supplies 24Vac to the steam ignition modual.

67. **(GAS OVENS) – XFMR2** – Step Down transformer 208Vac / 240Vac to 24Vac. Supplies 24Vac to the hot air ignition modual.

68. **XSFMR** – Step Down transformer 230Vac to 24Vac. Supplies 24Vac to optional meat probe controller.

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COMPONENT LOCATION DIAGRAMS

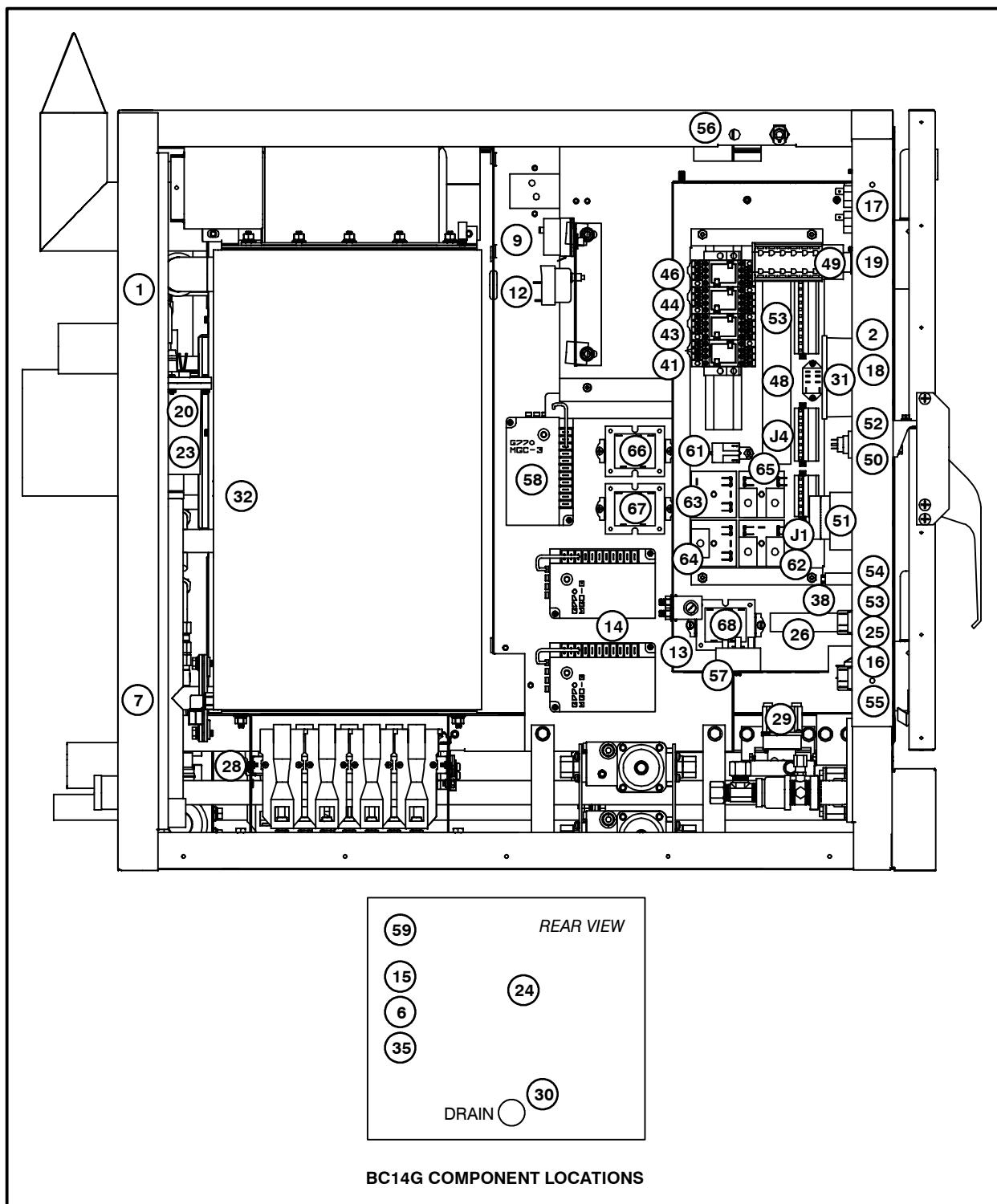


FIGURE 1

COMPONENT IDENTIFICATION

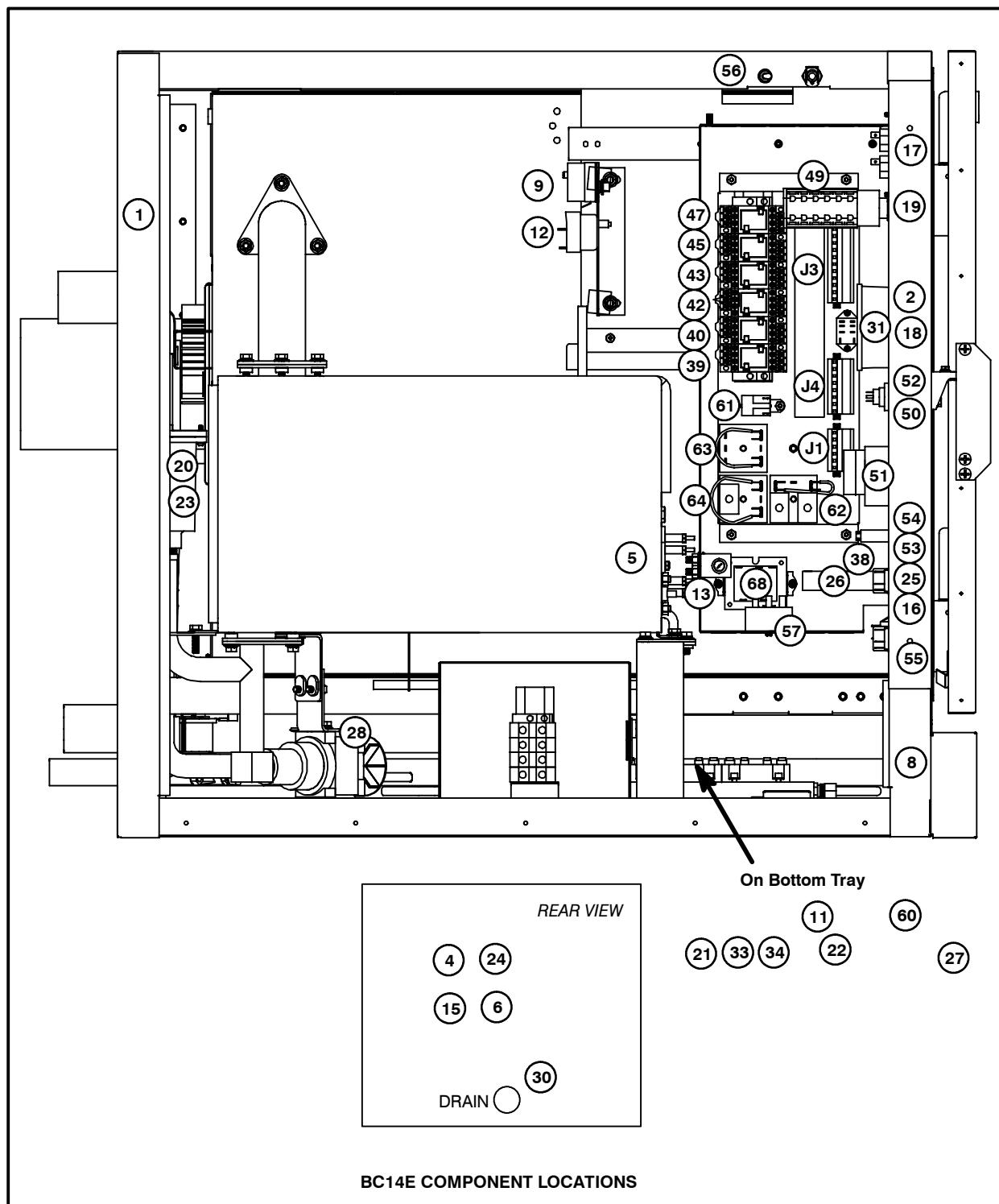


FIGURE 2

CHAPTER 7

BC14E SCHEMATICS

BC14E

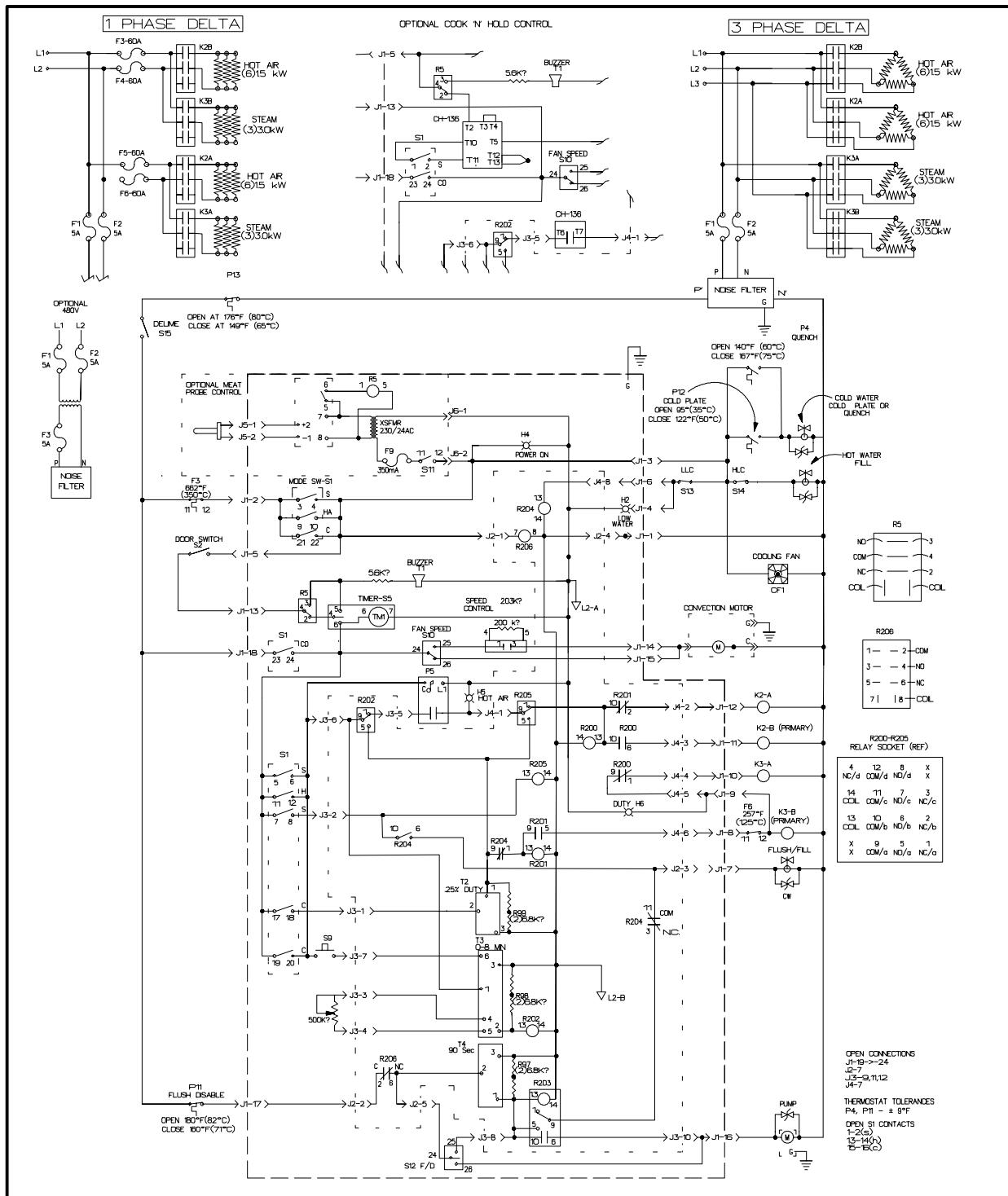


FIGURE 1

TROUBLESHOOTING

BC14E FOR CE

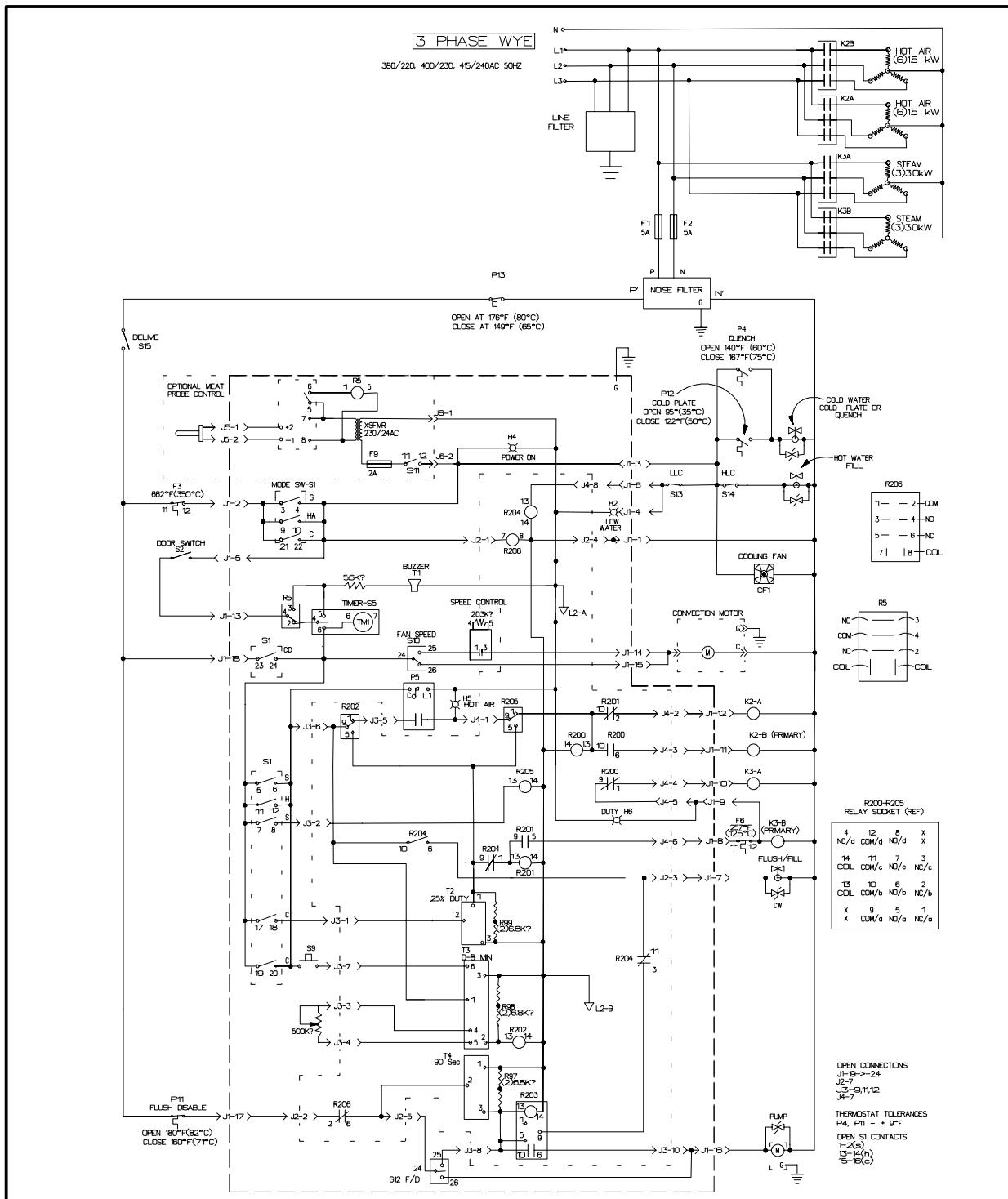


FIGURE 1

CHAPTER 8

BC14E
TROUBLESHOOTING

BC14E TROUBLESHOOTING GUIDE

In the following troubleshooting guide, the schematic is broken down into areas. This allows the oven to be checked in sections.

When troubleshooting, slide the control panel out and use your volt meter. The main control circuit voltage for all Synergy ovens is 230 volts. Once the problem is determined, it is often easier to remove the slide out from the oven completely to change components. To remove the slide out, disconnect the hot air thermostat probe, ground wire, and large brown plug in connector.

NOTE: Always troubleshoot a Synergy oven in the following sequence: COOL DOWN, HOT AIR, STEAM, and then COMBI. Reference the text that follows with the appropriate schematic to help troubleshoot each mode.

NO OPERATION WITH THE MODE SWITCH IN COOL DOWN

1. Verify the deliming switch is in the on position.
2. Verify the water to the oven is turned on.
3. Verify power is being supplied at the outlet.
4. Check the fuses in the panel underneath the control panel. See FIGURE 1, location (A).
5. **Single phase ovens** – Remove the front drip pan and check the 60 amp fuses located under the oven. See FIGURE 1, location (A).
6. Check the noise filter input and output. See FIGURE 1, location (A).
7. Check the P13 snap disk. See FIGURE 1, location (B).
8. Check the mode switch. See FIGURE 1.
9. Check the fan speed switch. See FIGURE 1, location (G).
10. If the motor works in high speed and not low, check the solid state speed control. See FIGURE 1, location (I).
11. Check the motor. See FIGURE 1, location (J).

NO OPERATION WITH THE MODE SWITCH IN HOT AIR

1. Check power at terminal 12 on the mode switch. See FIGURE 1, location (H). If there is no power, continue. If the power is 208V, proceed to STEP 8. See FIGURE 2, location (B).

2. Check the F3 oven high limit. See FIGURE 1, location (B).
3. Check the mode switch. See FIGURE 1.
4. Check the S2 door switch. See FIGURE 1, location (D).
5. Check relay R5. See FIGURE 1, location (E).
6. Check timer S5. Turn timer to ten minutes and continue. See FIGURE 1, location (E).
7. Check the mode switch. See FIGURE 1, location (H).
8. Check R202 relay. See FIGURE 2, location (B).
9. If the hot air light is not lit on P5, check the P5 temp controller for voltage. See FIGURE 2 location (B).
10. Check that relay R205 contacts 9 and 1 are closed. See FIGURE 2, location (C).
11. Check R201 relay contacts. See FIGURE 2, location (E).
12. Check solid state contactor K2-A, is the red LED on? See FIGURE 2, location (F).
13. Check R200 relay, coil and contacts. See FIGURE 2, location (D).
14. Check solid state contactor K2-B, is red LED on? See FIGURE 2, location (F).

NO OPERATION WITH THE MODE SWITCH IN STEAM

1. Check power at terminal 6 on the mode switch. See FIGURE 1, location (H). If there is no power, return to **NO OPERATION WITH THE MODE SWITCH IN HOT AIR**. Your problem is most likely a bad mode switch position. If power is 230V proceed.
2. If the steam logo by the mode switch is illuminated, jump to STEP 9.
3. If the LOW WATER light in the lower right hand corner of the control panel stays on, jump to **NO FILLING OF STEAM GENERATOR**.
4. Check that R202 relay contacts close. See FIGURE 3, location (B).
5. If the hot air light is not lit (H5) on P5, check P5 temp controller for voltage. See FIGURE 3, location (B).

TROUBLESHOOTING

6. Check that relay R205 contacts 9 to 5 are closed. Check coil and contacts for proper operation. See FIGURE 3, location (C).
7. Check F6 high limit. See FIGURE 3, location (F).
8. Check that R204 contacts 9 to 1 are closed. See FIGURE 3, location (E).
9. Check Solid State Contactor K3-B, is red LED on? See FIGURE 3, location (H).
10. Check R200 contacts 9 to 1 are closed. See FIGURE 3, location (H).
11. Check Solid State Contactor K3-A, is red LED on? See FIGURE 3, location (H).

NO FILLING OF STEAM GENERATOR

1. Verify water is on to Synergy oven and flowing through water restrictor.
2. Check mode switch positions 4, 10, and 22. See FIGURE 7, location (A).
3. Check input and output to fast LLC (Low Level Control) float. The LLC is the long float. See FIGURE 7, location (B).
4. Check relay R204, coil, input and output. See FIGURE 7.
5. Check fast fill solenoid. See FIGURE 7, location (D).
6. Verify hot water slow fill is operating. See FIGURE 7, locations (E) and (F).

NO OPERATION WITH THE MODE SWITCH IN COMBI

Most of this circuit has already been trouble shot by proving the HOT AIR and STEAM mode work.

1. Check T2 combi solid state timing relay input and output. See FIGURE 4, location (A).

NO ON DEMAND STEAM

Set time out and press ON DEMAND STEAM button.

2. Check S9 on demand steam button. See FIGURE 5, location (A).
3. Check input and output to T3 solid state timing relay. See FIGURE 5, location (B).
4. Check relay R202 coil and contacts. See FIGURE 5.

NO FLUSH / DRAIN MODE / MANUAL OR AUTO

The T4 flush/drain solid state timing relay is energized when the P11 flush disable snap-disk is closed. Both of these parameters must be met for the manual flush/drain switch to work.

NOTE: When the P11 flush disable snap-disk is closed the steam generator is below 160 °F (71 °C) and the oven is in the OFF position.

1. Check that the deliming switch (S15) is in the off position. See FIGURE 6, location (A).
2. Check that the P11 contact is closed. See FIGURE 6, location (B).
3. Check that relay R206 contacts are closed. See FIGURE 6.
4. **Auto Flush/Drain** – Check T4 flush/drain solid state timing relay inputs and outputs. See FIGURE 6, location (H).
5. **Manual Flush/Drain** – Check S12 flush/drain switch input and outputs. See FIGURE 6, location (D).
6. Check R203 relay coil and contacts. See FIGURE 6, location (E).
7. Check that R204 contacts are closed. See FIGURE 6, location (G).
8. Check flush/fill solenoid.

NO MEAT PROBE OPERATION

The Synergy oven must be on and the timer set to the stay on position. The meat probe must also be plugged into the front control panel.

1. Check mode switch, terminals 4, 10, and 22. See FIGURE 7, location (A).
2. Check S11 fuse. See FIGURE 7, location (J).
3. Check step down transformer XFMR inputs and outputs. See FIGURE 7, location (L).
4. Check inputs and outputs of meat probe controller. See FIGURE 9, location (M).
5. Check R5 relay coil and terminals. See FIGURE 7, location (O).
6. Check T1 buzzer, FIGURE 4.

BC14E SAFETY LIMITS FLOW CHART

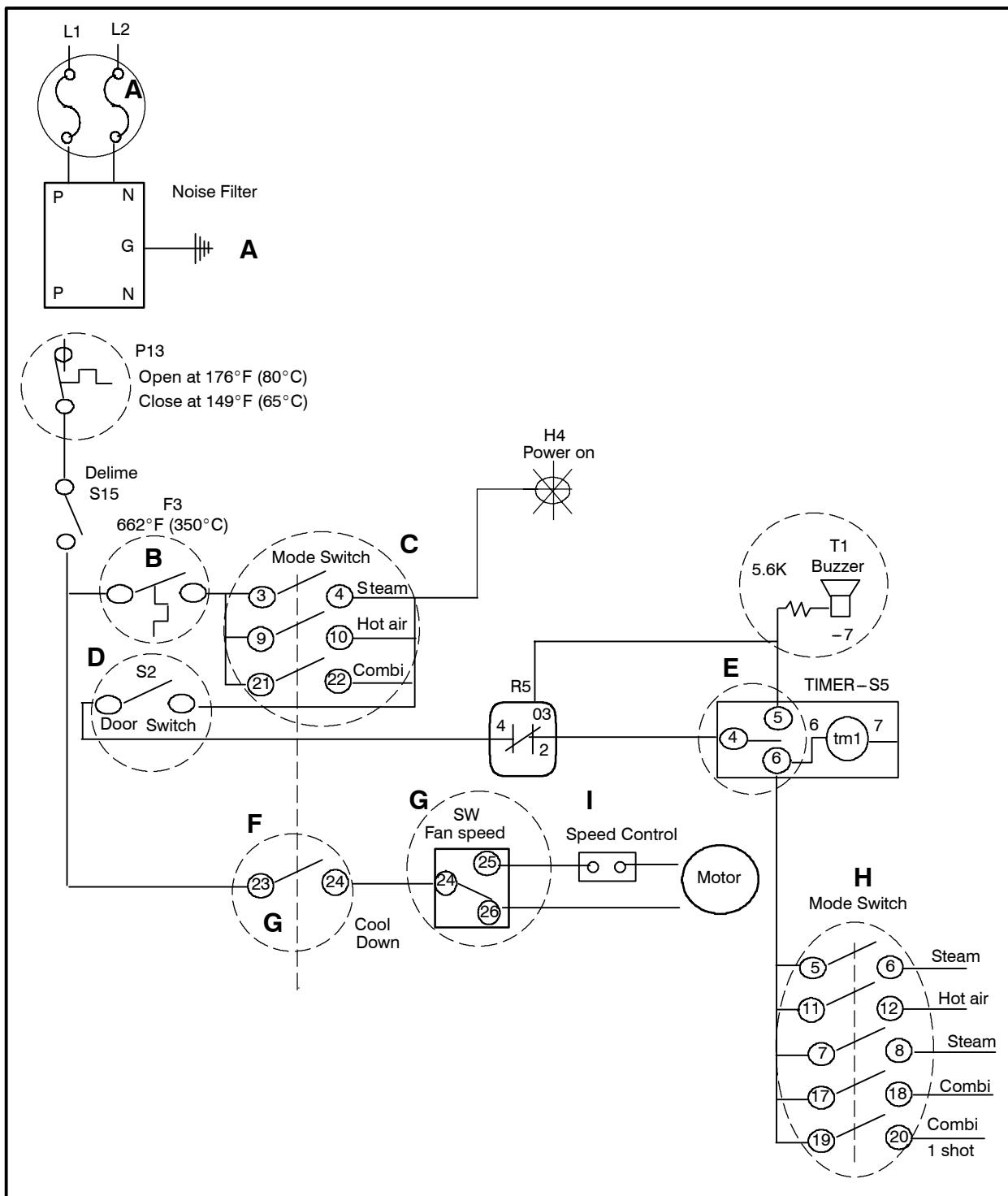


FIGURE 1

TROUBLESHOOTING

BC14E HOT AIR FLOW CHART

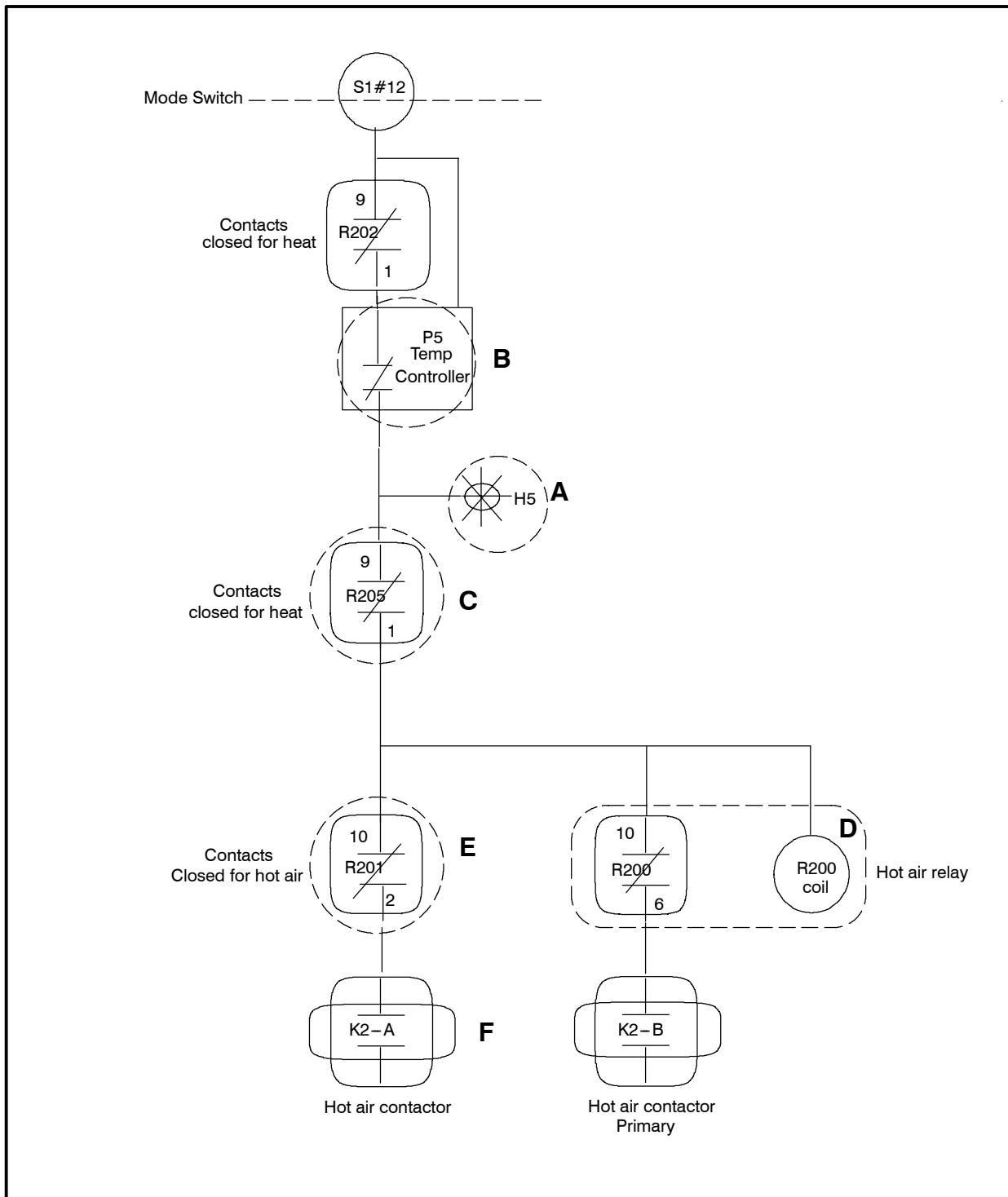


FIGURE 2

BC14E STEAM FLOW CHART

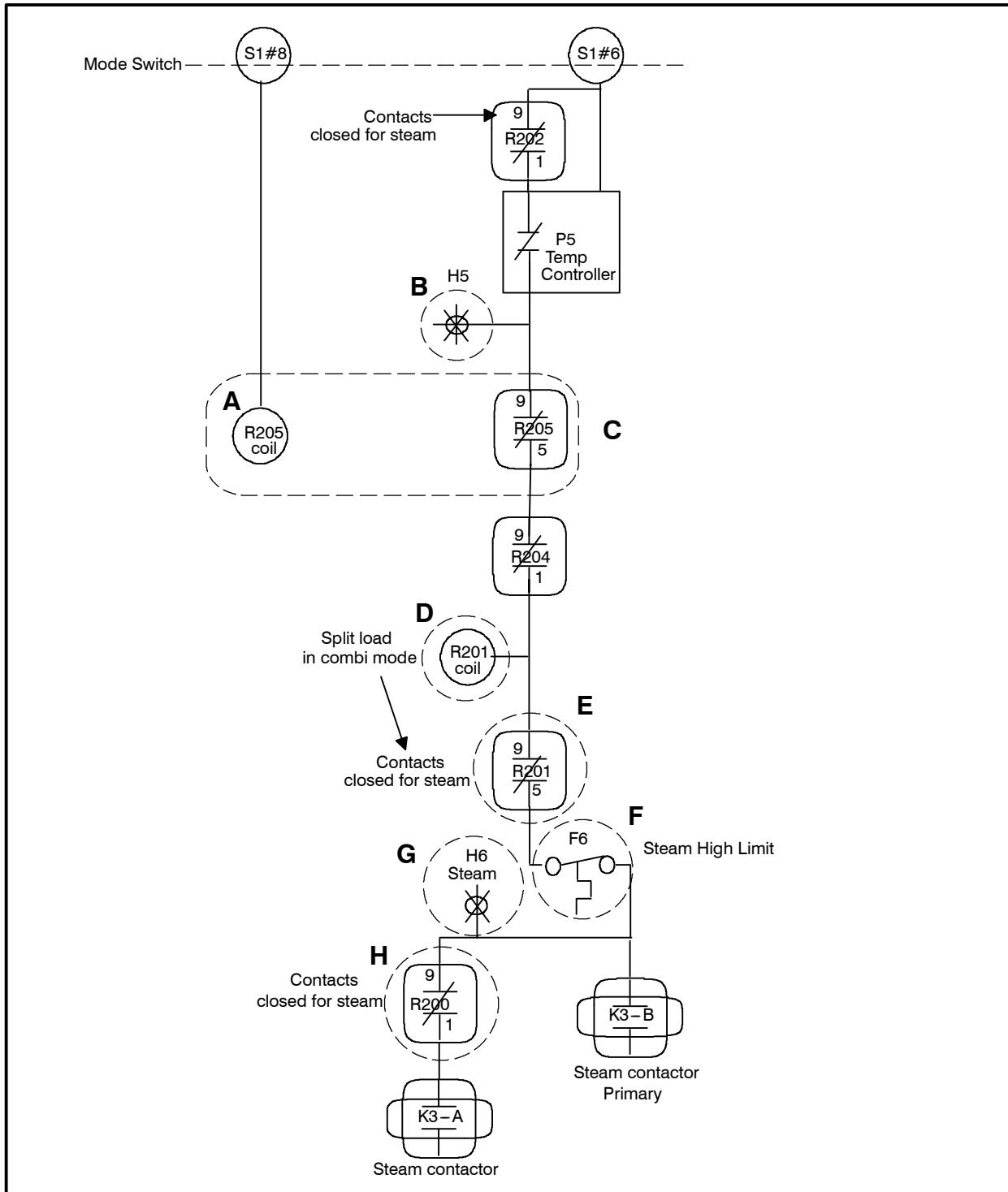


FIGURE 3

BC14E COMBI FLOW CHART

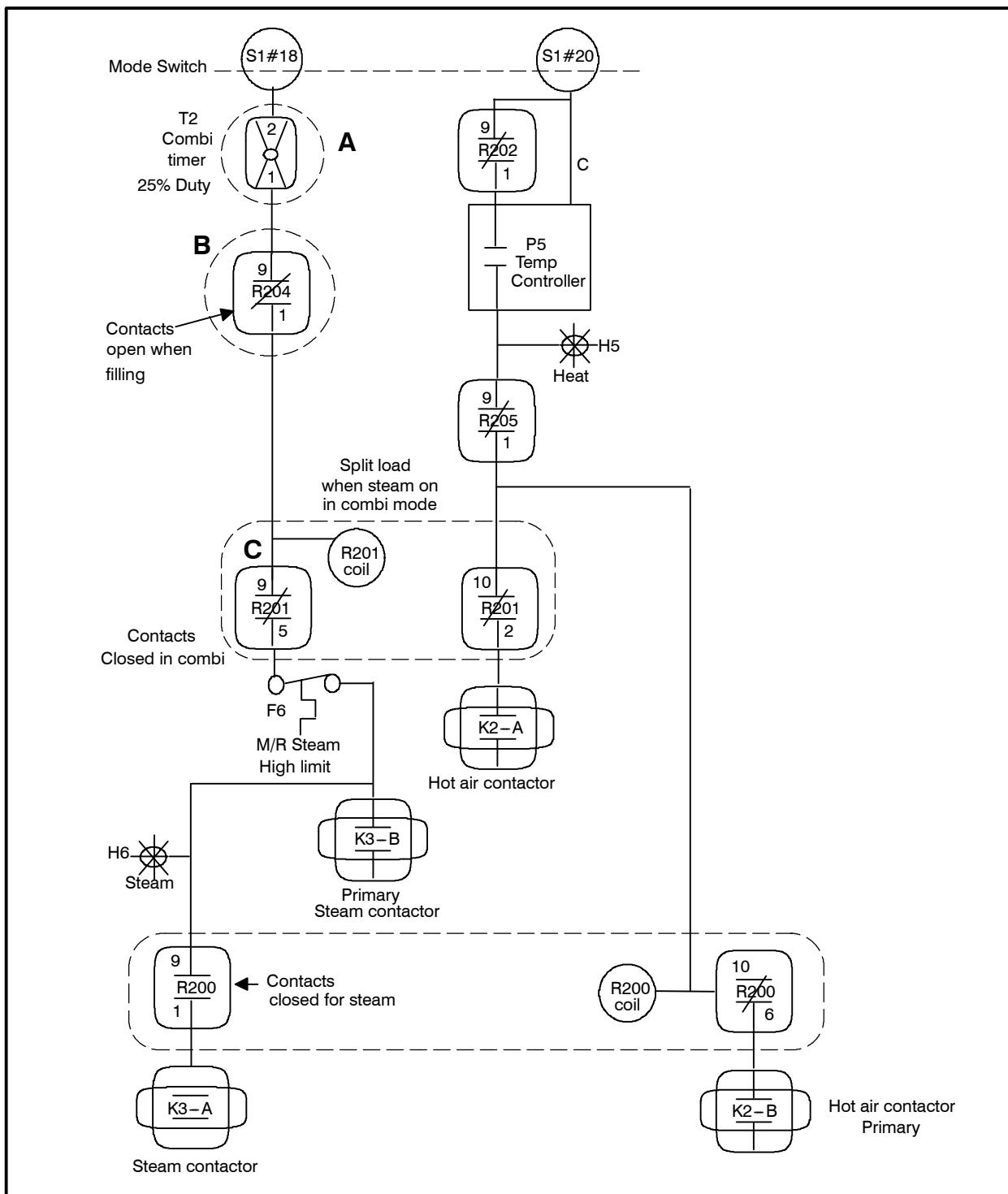


FIGURE 4

BC14E ON DEMAND FLOW CHART

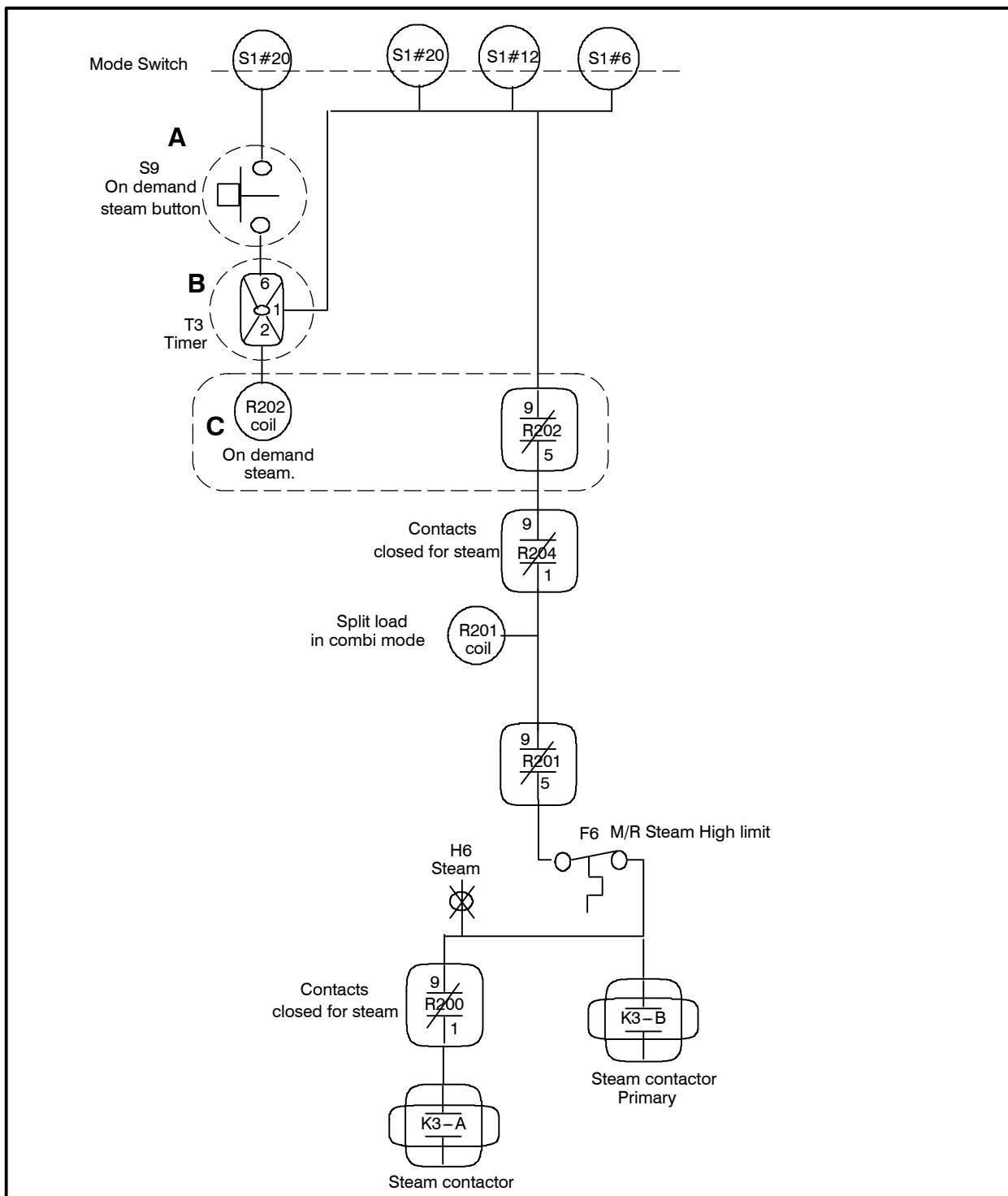


FIGURE 5

TROUBLESHOOTING

BC14E FLUSH FLOW CHART

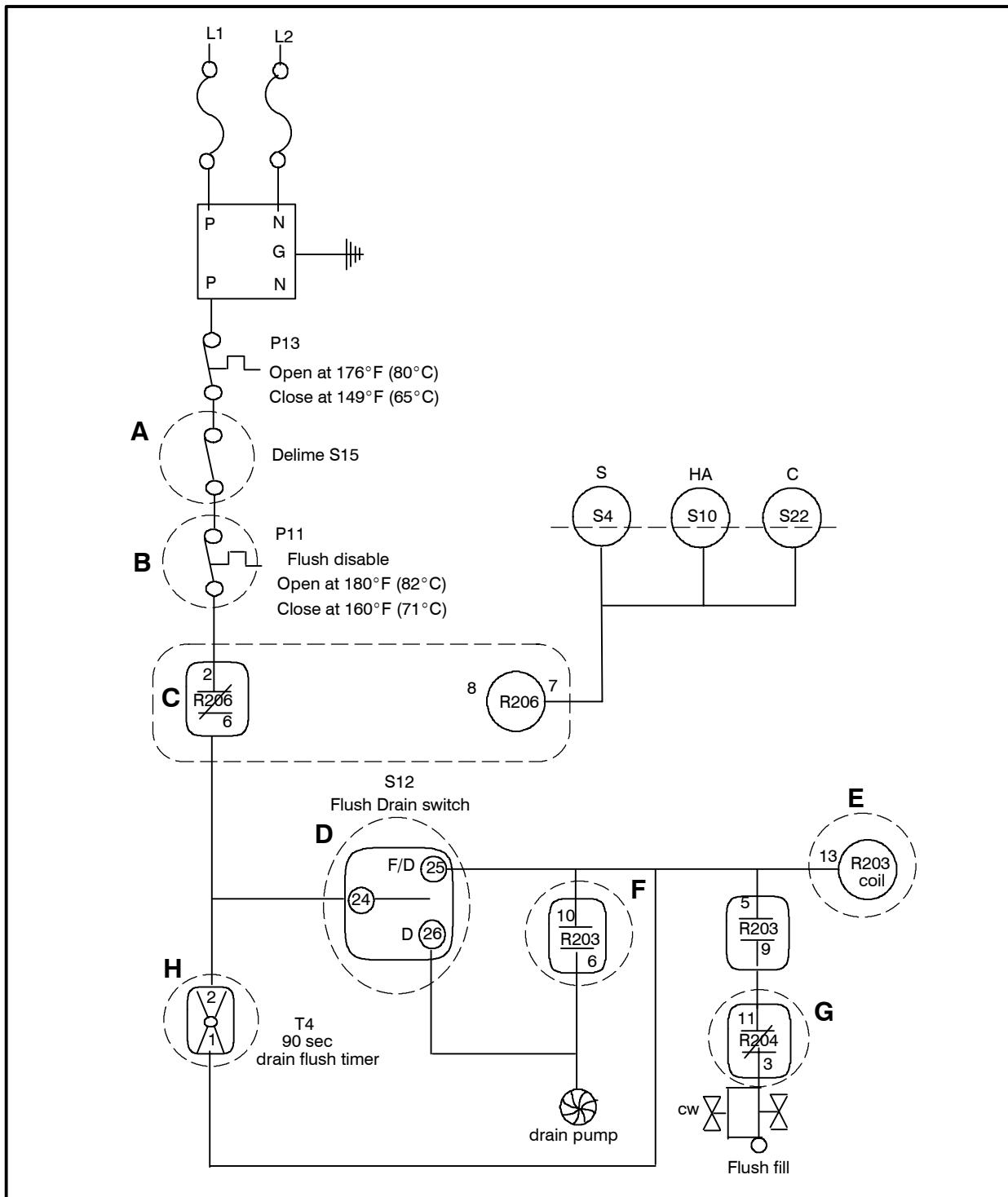


FIGURE 6

BC14E WATER FILL/MEAT PROBE

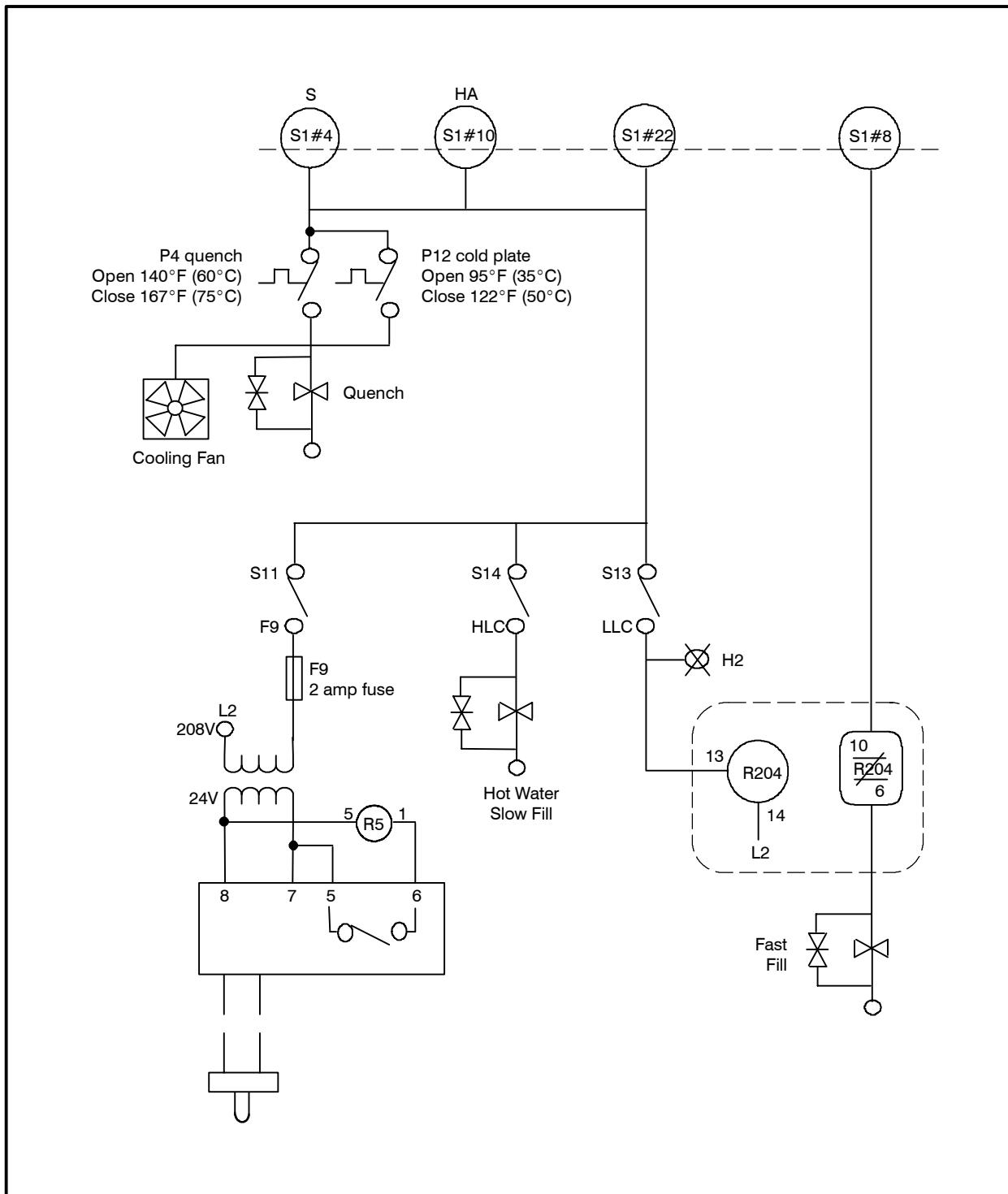


FIGURE 7

BC14E DRAIN ASSEMBLY

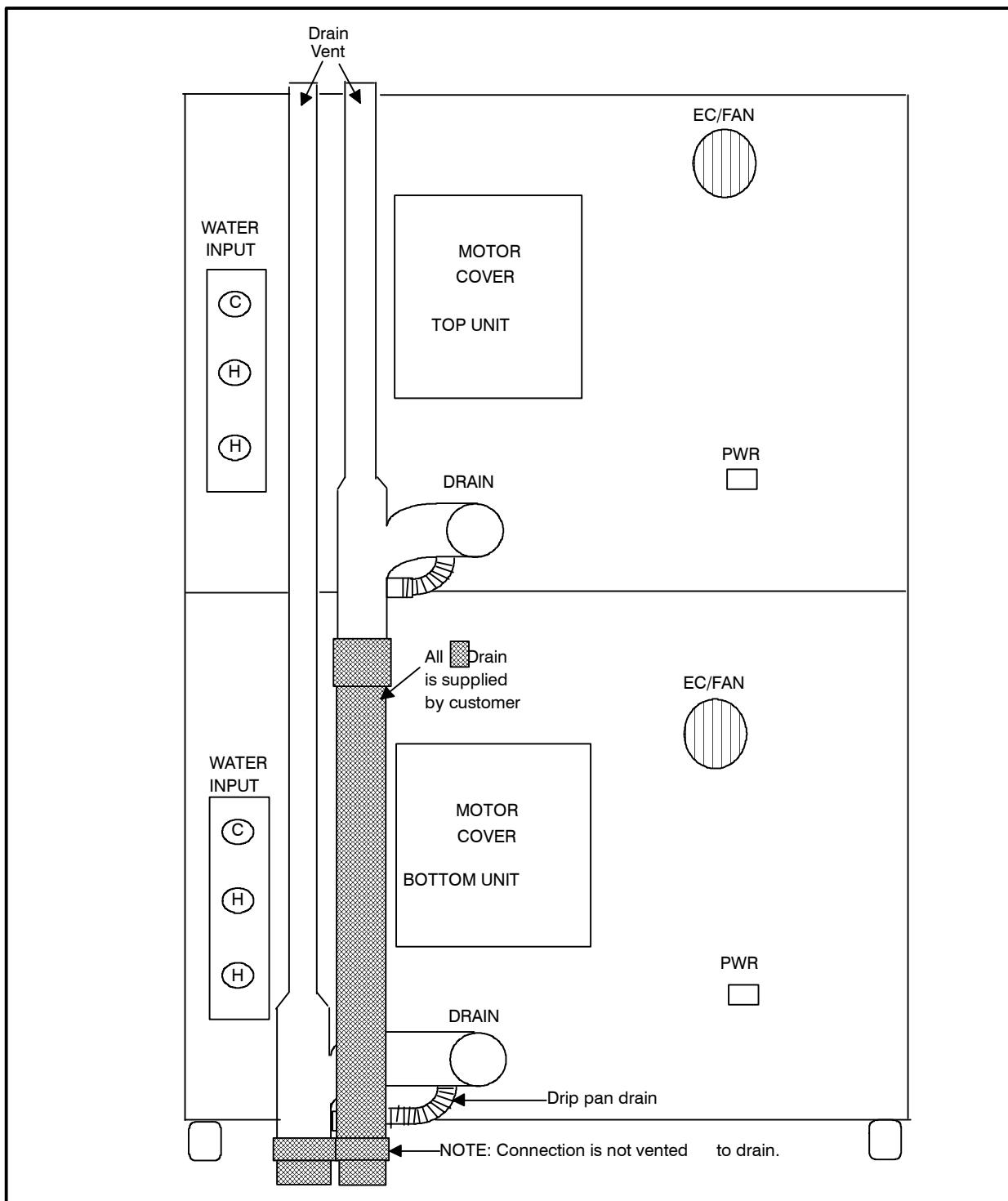


FIGURE 8

BC14E TIMER SETTINGS

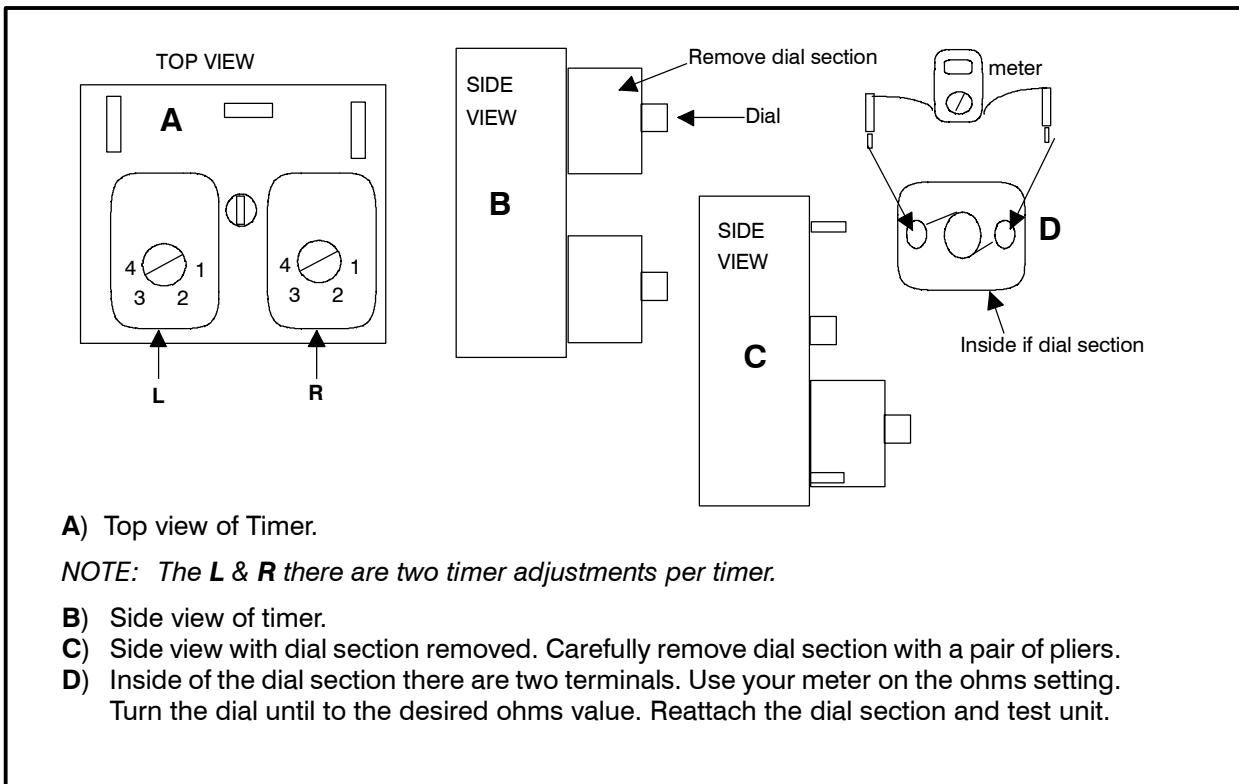


FIGURE 9

T2 Steam duty cycle In combi mode.

L) is 375K OHMS Steam **ON** 45 seconds.
 R) is 666K OHMS Steam **OFF** 80 seconds.

T3 One shot steam

NOTE: Set by timer on front panel.

T4 Flush timer.

L) Is 150K OHMS Flush **ON** 90 seconds.

TROUBLESHOOTING

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CHAPTER 9

BC14E INSTALLATION

INSTALLATION SPECIFICATIONS

NOTE: Electrical and water connections must be performed by a qualified installer only.

MAXIMUM SHELF LOADING	
BC14E	100 lbs (45.5 Kg)

TABLE 1

PLUMBING SPECIFICATIONS – BC14E/AA	
Water	
Water Pressure	30 PSI (207 kPa) minimum 50 PSI (345 kPa) maximum
Water Connection	3/4" Hose Hot and Cold Water
Water Regulator Setting	Preset to 20 PSI (138 kPa)
Drainage	Atmospheric Vented Drain
Drain Connection	2.00" (50.8mm) Copper
Avg Water Drain Temp.	Approximately 160°F (71°C)

TABLE 2

PLUMBING SPECIFICATIONS – BC14EDS/AA	
Water	
Water Pressure	30 PSI (207 kPa) minimum 50 PSI (345 kPa) maximum
Water Connection	3/4" Hose Cold Water
Water Regulator Setting	Preset to 20 PSI (138 kPa)
Drainage	Atmospheric Vented Drain
Drain Connection	2.00" (50.8mm) Copper
Avg Water Drain Temp.	Approximately 160°F (71°C)

NOTE: For steam requirements see page 9–4 STEAM CONNECTION for the BC14EDS

TABLE 3

INSTALLATION

RATINGS – ELECTRIC APPLIANCES – BC14E/AA and BC14EDS/AA						
Voltage	Hz	Phase	Max Load (amps)			Motor
			L1	L2	L3	
208	60	1	89	89	–	1/2HP 208-240VAC, 50/60 Hz
208	60	3	52	52	52	1/2HP 208-240VAC, 50/60 Hz
240	60	1	82	82	–	1/2HP 208-240VAC, 50/60 Hz
240	60	3	47	47	47	1/2HP 208-240VAC, 50/60 Hz
480	60	3	23	23	23	1/2HP 208-240VAC, 50/60 Hz
380/220	50	3	25	25	25	1/2HP 208-240VAC, 50/60 Hz
415/240	50	3	27	27	27	1/2HP 208-240VAC, 50/60 Hz
400/230	50	3	26	26	26	1/2HP 208-240VAC, 50/60 Hz

TABLE 4

OVEN LOCATION AND LEVELING

OVEN LOCATION

The well planned and proper placement of your oven will result in long term operator convenience and satisfactory performance.

Certain minimum clearances must be maintained between the oven and any combustible or non-combustible construction. See the table below.

In addition, the following clearances are recommended for servicing.

- Oven body sides – 12" (30cm)
- Oven body back – 12" (30cm)

Left Side Heat Shield

Heat sources should not be near the air vents located on the left hand side of the gas appliance. Consult the factory for optional protective side heat shield.

BC14E P/N R9527

Oven Model	MINIMUM REQUIRED CLEARANCES		
	Right Side	Left Side	Back
BC14E	1" (25.4mm)	4" (101.6mm)	6" (152.4mm)

OVEN LEVELING

This oven should be set up in place.

With any stand or oven, be certain that the surface is level, even and solid. A sloped or uneven base may cause the appliance to function improperly. Minor unevenness can be corrected by adjusting the metal leg feet. The maximum adjustment of the leg feet is 1-3/8" (35mm).

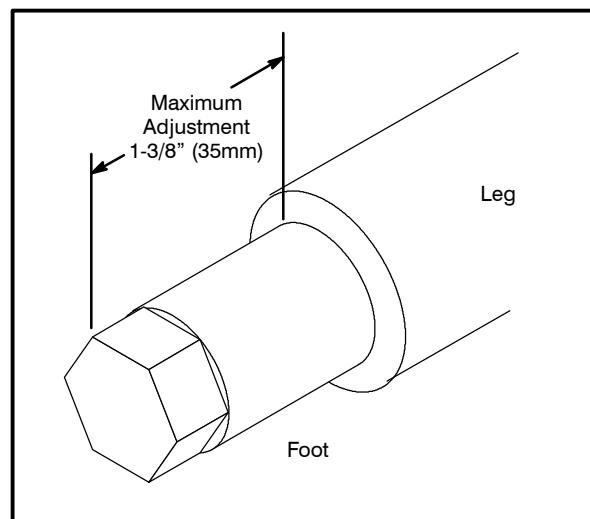


FIGURE 1

STACKING



WARNING!!

Stacking should be performed by qualified installation personnel only. The appliances are heavy. Take care to use proper tools and techniques when lifting and stacking appliances.

1. Remove the drip pan from the top appliance.
2. Attach the legs or casters to the bottom appliance.
3. Place the top appliance on the bottom appliance. Be sure all four sides are flush.
4. Bolt the two appliances together using the bolts provided.
5. Replace the drip pan.
6. Connect the drain, electrical and water. Refer to page 9-4.

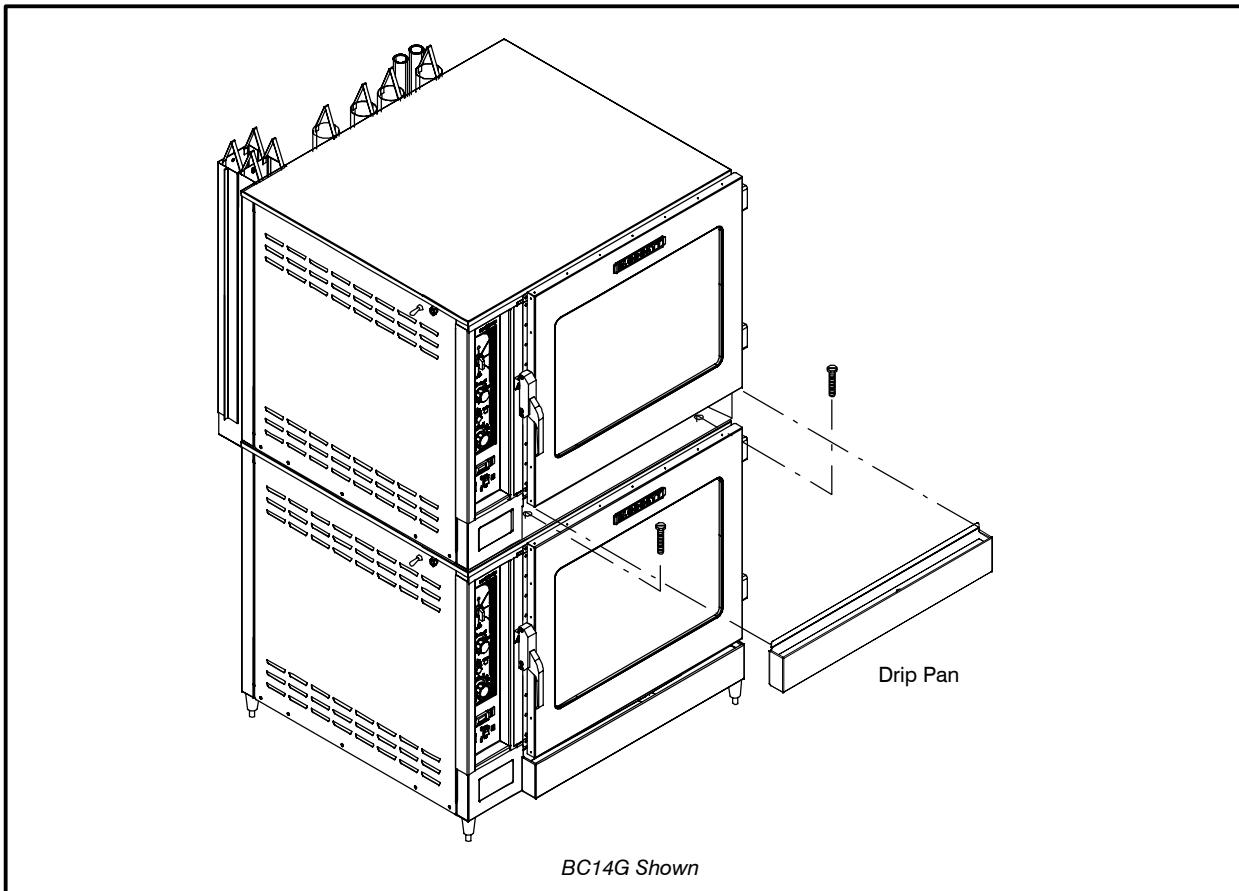


FIGURE 2

PLUMBING CONNECTIONS

WATER CONNECTION

Connect the appliance to quality water via a pressure hose with 3/4" (19mm) couplings. See FIGURE 3 for connections. A shut off valve is to be provided adjacent to the oven.



WARNING!!

Operating the appliance without the water regulator installed will invalidate your warranty.

Water must meet the following minimum requirements:

- Total Dissolved Solids (TDS) content will not exceed 30 parts per million.
- Water PH must be 7.0 or higher



WARNING!!

The use of poor quality water will invalidate your warranty.

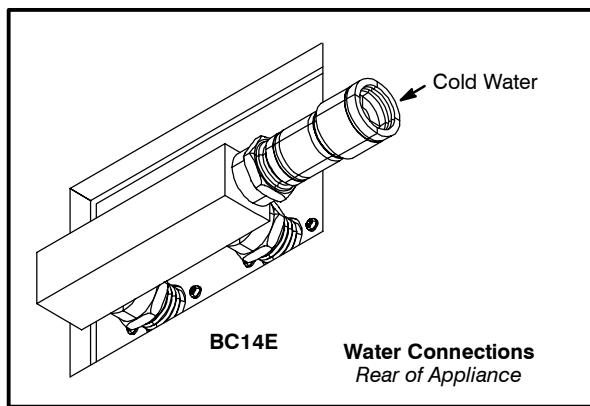


FIGURE 3

STEAM CONNECTION FOR BC14EDS

Steam supply line is 3/4" NPT. Steam must be clean, dry and potable. A particle screen and bucket trap may be needed and are recommended. 60 lbs per hour is the maximum usage per oven. Steam supply pressure should not exceed 40 to 50 psi. The flow pressure is 1-1/2 to 3-1/2 psi and is set at the steam pressure regulator supplied inside the oven.

DRAIN CONNECTION

The steam vent assemblies are constructed of 2" DWV copper piping reduced to 1-1/2 DWV pipe. If the vent system is not purchased as an option (R9381), Blodgett Combi recommends plumbing the oven as shown in FIGURE 4.

The steam vent should be run to an open floor drain avoiding flexible hose that could sag and allow trapped water to accumulate. The customer must supply the piping from the oven to the drain.

Connect the drip pan drain to the steam vent with 1.125 I.D. hose.

Use the drain vent assembly and a 2" (50.8mm) pipe for drain connection.

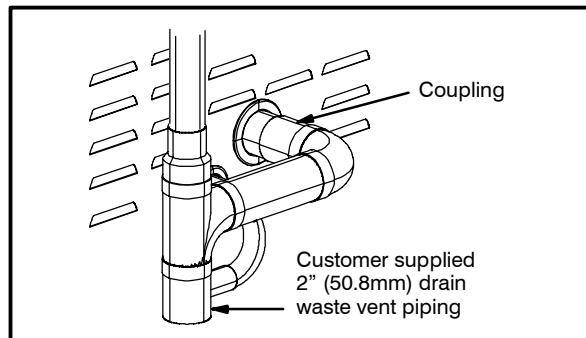


FIGURE 4

Specific water/drain connection for City of Los Angeles

1. Each drain line from the appliance shall be routed without dips or sags to terminate above the flood level rim of an approved indirect waste receptor.
2. The appliance shall be installed in accordance with the manufacturer's printed instructions and the LAPC and LAMC, 1999 editions.
3. A backflow protection device shall be installed on the potable water system directly ahead of the appliance. The backflow protection device shall be any of the following: an approved pressure type vacuum breaker installed at least 12" above the highest point of use, a double check valve backflow preventer or a reduced pressure principal backflow preventer.

DOOR ADJUSTMENTS

NOTE: When making door adjustments, always adjust the hinge side first.

1. Swing the door so it just hits or runs into the catch on the left hand side of the door. DO NOT latch the door handle to the catch on the oven body. The left hand side of the door should just be touching the gasket evenly from top to bottom.

Adjusting the Hinges

NOTE: If you need to adjust the hinges, always adjust the top hinge first.

NOTE: The hinges on the door have no adjustment, you can only adjust the hinge on the oven.

1. Adjust the top hinge as follows:
 - A.) Loosen the three allen head bolts on the top hinge attached to the oven.
 - B.) Tap the hinge in or out as needed. Keep the hinges parallel as shown in FIGURE 5C.
 - C.) Tighten the three allen head bolts
2. Adjust the bottom hinge as follows:
 - A.) You must remove the weight of the door from the bottom hinge to adjust it. To remove the weight from the hinge, slide a screwdriver head into the gap where the two top hinges touch and pivot. Lift up the door slightly.
 - A.) Loosen the three allen head bolts on the bottom hinge attached to the oven.

B.) Tap the hinge in or out as needed. Keep the hinges parallel as shown in FIGURE 5C.

- C.) Tighten the three allen head bolts
- D.) Remove the screwdriver to lower the door.

Adjusting the Catch

Adjust the catch as follows:

1. In the top of the door handle is a round roller. Swing the door until the door handle is close to the catch on the oven.
2. Loosen the two bolts holding the latch to the face of the appliance.
3. Adjust the catch from side to side until the head of the catch is centered with the roller.
4. Adjust the catch up and down. There should be a small clearance between the wheel on the door handle and the tooth of the catch on the oven. See FIGURE 5. In most cases the catch will be all the way up.
5. Tighten the two bolts that hold the catch in place.
6. For easy alignment, swing the door close to the catch. Use a felt tipped marker on the door handle to mark the catch position.
7. Adjust the top of the catch in and out. Adjust the top of the catch so that the door closes firmly.
8. Tighten the single catch bolt.

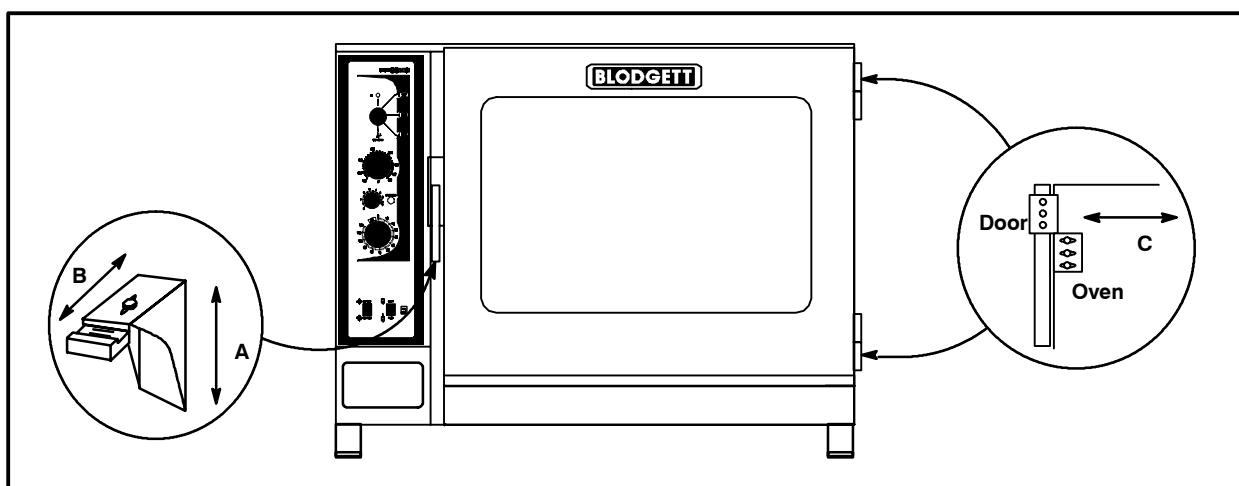


FIGURE 5

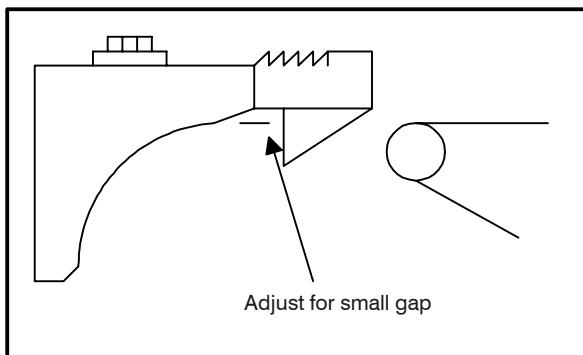


FIGURE 6

Checking Door Adjustment

NOTE: When the door is adjusted properly, you should be able to close a dollar bill between the door and gasket on all four sides of the door and still be able to pull it out. If you cannot, the door is too tight, and must be readjusted.

1. Check the closing of the door in the steam mode.
2. Next check the closing of the door when the oven is heated to 374°F.
3. The door should close easily in both conditions. If it does not, the door is too tight and must be readjusted.

FINE TUNING A DOOR GASKET

Use the following procedure if the door shuts well in both hot air and steam, but, you still have a little steam leaking from the door gasket:

1. Make a note where the steam is leaking.
2. Take a tube of silicone and lay a bead out on a flat surface. Let it dry.
3. Tack the bead behind the door gasket with a couple of dabs of silicone. This pushes the gasket out enough to seal the steam leak and does not over tighten the door.

OR:

1. If you look behind the gasket, it is held in place with a metal bar with screws. Change the screws behind the gasket where it is leaking to 10/24 round head screws. Use stainless screws and put NEVER SEAZE on the threads so they won't bind.